DOCUMENT RESUME

ED 384 809 CE 069 530

AUTHOR	Cesnich, J.; And Others
TITLE	The Challenge of Change. National Printing Industry Training Council Training Plan.
INSTITUTION	National Centre for Vocational Education Research, Leabrook (Australia).
REPORT NO	ISBN-0-86397-055-9
PUB DATE	94
NOTE	99p.
AVAILABLE FROM	National Centre for Vocational Education Research, Ltd., 252 Kensington Road, Leabrook, South Australia 5068, Australia.
PUB TYPE	Reports - General (140)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Change Strategies; Educational Certificates; *Educational Change; Entry Workers; Foreign Countries; *Futures (of Society); Inplant Programs; *Job Training; Postsecondary Education; *Printing; Publishing Industry; Secondary Education; Student Certification
IDENTIFIERS	Australia

ABSTRACT

Principally concerned with printing, publishing, and paper and paper products, the Australian printing industry is segmented into two sectors: general production and specialist (concerned with a variety of processes and products.) Current arrangements for entry-level training in the industry generally consist of off-the-job training usually provided by Technical and Further Education. Existing arrangements do not seem to be adequate to provide good entry-level training in the vocational and generic key competencies for the subsequent adaptability and career path development of the work force. The industry needs to place a greater emphasis on planning for its future, particularly in terms of making sure it has a pool of skilled workers on which it can draw during periods of economic upturns. One of the most significant factors shaping future industry trends is technological change. Given the rapid changes in technology, traditional approaches to training face some challenge. Recommendations for a printing industry training plan include the following: competency-based training, recruitment standards, flexible training pathways, training agreements, management training, access and equity, and national assessment, certification, and recognition systems. The issue of how entry-level training is to be funded will be affected by choice of delivery and assessment methods. The relatively concentrated off-the-job training arrangements may help the printing industry be among those leading the change process. (Appendixes include profiles of each industry sector, consultations and survey, National Printing Industry Training Council (NPITC) Carmichael Working Party, and Annual Student Contact Hours (ASCH) and course coding. Contains a 44-item bibliography.) (YLB)

ED 384 809

The challenge of change

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D LUNDBERG
H GUTHRIE

National Printing Industry Training Council Training Plan

NPITC

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The National Printing Industry Training Council training plan

NCVER
ADELAIDE
1994

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ISBN 0 86397 055 9
TD/TNC 36.34

Published by
NCVER (National Centre for Vocational Education Research Ltd)
A.C.N. 007 967 311
252 Kensington Road
Leabrook, South Australia 5068

Foreword

This national printing industry training plan is intended to be a guide to the future development of training arrangements for the printing industry over the next decade. It has been prepared under the direction of a working party of the National Printing Industry Training Council.

This national printing industry training plan will also be an input to the process of developing a more integrated and nationally consistent system of entry-level training in Australia. Other industries are also involved in the development of industry training plans, in accordance with a recommendation in the Employment and Skill Formation Council's (ESFC) March 1992 report on *The Australian Vocational Certificate Training System* (AVCTS). The completed plans will become inputs from industry to the development of State/Territory training plans by State/Territory training authorities, and national training plans by the Australian National Training Authority (ANTA).

The development of these training plans complements the pilot testing of all elements of the Australian Vocational Certificate (AVC) training system which is currently underway, prior to implementation of an AVC system between January 1995 and January 1997. The federal Department of Employment, Education and Training (DEET) has engaged the National Centre for Vocational Education Research Ltd (NCVER) to undertake the implementation review evaluation of all of the AVC pilot projects.

The National Printing Industry Training Council acknowledges that the funding of this industry training plan was provided by the Commonwealth Department of Employment, Education and Training.

The National Printing Industry Training Council (NPITC) also engaged NCVER to undertake consultations and survey work within the printing industry and other research to develop the draft national training plan for the printing industry. The National Printing Industry Training Council records its appreciation to NCVER and to Ms Janine Cesnich, Dr David Lundberg and Mr Hugh Guthrie for their contributions to the preparation of the draft plan.

The final plan reflects consideration of the draft plan by the National Printing Industry Training Council (NPITC) and key interest groups.

D Lundberg

Printing industry training plan
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Printing industry training plan

Executive summary

1 Overview of the printing industry

The printing industry has been principally concerned with printing, publishing and paper and paper products under the old Australian Standard Industry Classification (ASIC) code 26 as 263 paper and paper products sector and 264 printing and allied sector. The scope of the printing industry can, however, be expanded beyond these sectors. The following are a number of activities closely affiliated to these sectors: printing ink manufacture, flexible packaging and abrasive products, signs and advertising displays, machinery and equipment wholesalers, books and paper products wholesalers, advertising services, typing, copying and mailing services. In traditional terms the printing industry is segmented into a general production sector, and a specialist sector concerned with a variety of processes and products. The industry has a large number of small companies, often family owned and operated, but nearly 53 per cent of employment, nearly 61 per cent of wages and just over 64 per cent of turnover are accounted for by 4 per cent of establishments employing 100 people or more.

2 Current training provision

In brief the current arrangements for entry-level training in the printing industry generally consists of off-the-job training for trades apprentices or ATS (Australian Traineeship System) trainees, usually provided by TAFE. TAFE provides printing industry trades training for every State or Territory capital except Darwin, in concentrated arrangements in each capital city because of the cost of equipment.

Some (usually) larger enterprises provide enterprise-specific training, some of which is formally accredited, and PATEFA (Printing and Allied Trades Employers' Federation of Australia) and other private providers (notably equipment suppliers) are also involved in industry training.

As well as entry-level training, current printing industry training arrangements include limited provision of advanced certificates and other post-basic courses through TAFE and general supervision and management programs by PATEFA, private providers, TAFE and universities.

There is no disputing that apprenticeships have made an enormous contribution to training in the printing industry in Australia. Notwithstanding this, changes in technology and work practices have caused dramatic changes and opened to question the traditional approaches to entry-level training and the subsequent opportunities to

the development of individual career paths. Consequently there is a growing need for broader and more flexible arrangements. Formalised operator training has particularly been poorly served by the traditional system, as have a number of other trade-based industries.

The existing arrangements do not seem to be adequate to provide good entry-level training in the vocational and generic key competencies, nor for the subsequent adaptability and career path development of the workforce. Formalised operator training is particularly poorly served as with a number of other trade-based industries.

3 Future industry trends and training needs

One of the main lessons learnt from the recession has been that the industry needs to place a greater emphasis on planning for its future, particularly in terms of making sure it has a pool of skilled workers on which it can draw during periods of economic upturns.

One of the most significant factors which is and will continue to shape future industry trends is technological change. The introduction of new technology into the industry implies change in areas such as skill requirements, career pathways, job structures and training.

Given the rapid changes in technology, traditional approaches to training (including apprenticeships) must be under some challenge. While it would not be appropriate to disregard traditional approaches to training, while the industry is still evolving, new and more innovative training will need to be developed for the industry of the future. The challenge therefore, is that training will need to become more open, flexible and accessible to a much wider range of clients than traditionally has been available.

In an industrial context, the move towards enterprise bargaining has been identified as one of the most significant changes affecting the industry in industrial relations terms. What its effect on training will be, however, is still not yet clear.

4 Future industry training delivery arrangements

The future training delivery arrangements for the printing industry need to be determined by the printing industry, with reference to major developments in the national training reform agenda outlined in the Finn, Carmichael and Mayer reports, which are broadly supported by Commonwealth, State and Territory Governments. These reports provide a policy framework within which the future options for training arrangements and structures for the printing industry can be defined.

At present, general opinion by a significant proportion of the industry is that training in the industry needs to become more integrated and systemic. The future training effort needs to be more focussed and as similar as possible between States (this should happen with the introduction of competency-based training (CBT) in the near future).

People consulted also emphasised the need for flexibility to be built into training and related career paths. Workers within the industry need to be provided with a level of skills which will allow them to move more freely in the industry. That is, the industry needs to produce more highly skilled people who are able to be more adaptable and who can come to terms and operate different forms of equipment.

In terms of entry into the industry, the early school leaver apprentice pathway was the traditional manner of entry. Today, however, it is becoming less appropriate as the printing industry changes in ways which require higher levels of attainment in skills broadly consistent with the key competencies.

It is likely that the early school leaver apprenticeship route will 'die out', but some elements of the industry may want to retain this option for a time. Future training is likely to focus on two options for Year 12 completers: either apprenticeships/ traineeships or a vocational year. It is possible that a vocational year leading into reduced term apprenticeships/traineeships will become the increasingly common pattern for the future, because of its advantages for employers, trainees and industry generally.

A possible preparatory pathway that is compatible with the AVC report is to build vocational or prevocational subjects into the school curriculum. The more vocationally rigorous option is to develop a TRAC-style program for the printing industry (refer section 4.3). A less vocationally rigorous approach involves broad work experience within an occupational studies subject that might be prevocational preparation for a related cluster of industries, such as the printing, information, and communication industries. The second type would be purely prevocational and preparatory.

In terms of trainer training the future effectiveness of training for the printing industry will depend upon a strategic approach to the development of a system which is more capable of delivering higher quality training, and of assessing on-the-job attainments of apprentices or trainees in a more consistent and valid manner.

With the broad number of groups disadvantaged in respect to training, there is a need for more flexible and alternative training arrangements (e.g. on-site training, mobile training centres, modularised training programs etc.) which are compatible with the work schedules of rural workers, small business employees and the like.

5 Future assessment, recognition and certification arrangements

Assessment is a key issue in any industry training plan, but it is one that has tended to be neglected. In any competency-based training system, there need to be clearly defined competency standards, which reflect marketplace needs of industry, now and in the foreseeable future, and so provide a sound basis for assessment. A competency-based training system also needs assessment processes which validly assess achievement in relation to those standards.

Therefore, there is a general need to assess trainees' attainments against both national and enterprise vocational standards. There is a need for a consensus about what minimum standards are.

The consultations established a clear and joint responsibility between off-the-job providers and on-the-job training supervisors for assessing trainees. However for prevocational programs which do not include workplace placements, provider-based assessments only will be possible. Nevertheless assessment activities will need to be structured to maximise the value of the assessment information provided to prospective employers and thereby maximise the value of the assessment process to individual program participants.

Training and assessing trainees' attainments against 'Mayer' employment-related key competencies is a more straight-forward matter. Key competencies are seen by industry generally as being relevant underpinning competencies for employment. It would follow that assessment of the key competencies would also be a public responsibility. It is unlikely that employers would want to replicate public assessment of key competencies. However, such assessment processes would have to be carefully designed and implemented to ensure validity.

Assessor and trainer training are seen as important considerations. It is recognised that there is a need for suitable training for workplace assessors (as defined by the industry), if not also for those involved in a more industry-wide assessment and auditing role.

The maintenance of assessment records will be a shared responsibility of the off-the-job provider and employers. Individuals would retain statements of attainment from off-the-job providers and their logbooks as part of a personal portfolio. Existing selection and other assessment procedures would be adequate to test the veracity of individuals' claims. In addition, recognition of prior learning (RPL) procedures could be used where there was doubt about the accuracy of the claims made.

The printing industry's training plan will need to relate to the National Framework for Recognition of Training (NFROT) or the training provided under the plan will lack the advantages of nationally consistent recognition arrangements. It will also have to be seen in relation to the proposed national qualifications framework.

There is a need to develop a suitable range of assessor training programs and address ways of recognising the increasingly important role of training within the industry and, in particular, in the workplace. The training and assessment roles will need to be acknowledged as an important component of industrial relations.

6 Funding training

The issue of how entry-level training for the printing industry is to be funded will be significantly affected by the choices made by firms within the printing industry about how training is to be delivered and assessed. The choices made about primarily work-based or primarily institution-based training may be particularly significant in relation to funding.

The Employment and Skills Formation Council's (ESFC) Australian Vocational Certificate Training System (AVCTS) report proposed that training allowances be provided by the Commonwealth for trainees engaged in work-based training where they were necessary to bring the trainee's income up to the common benefit level for 18 year olds (e.g. on AUSTUDY). The training allowances for trainees are likely to provide a sufficient incentive for trainees who take the half-work/half-study pathway option, and AUSTUDY will be available to those who take the vocational year pathway on the same basis as other students enrolled in full-time study programs.

The ESFC's AVCTS report also proposed that employers be paid training incentives under the Australian Vocational Certificate (AVC) system, in the form of a lump sum when trainees undertaking work-based training attain Australian Standards Framework (ASF) level 2 and ASF level 3 competencies. The employer training incentives offered in relation to the Australian Vocational Certificate (AVC) system, while welcome, are not in themselves likely to encourage printing employers to offer enough training places.

7 Implementing change

The relatively concentrated off-the-job vocational education and training arrangements for the printing industry may assist the printing industry to be among those leading the process of change and gaining the benefits of better training earlier.

Recommendations

The challenge of change

Recommendation 1

The printing industry recognises that all elements of the industry must respond to the challenge of change in co-operation with education and training providers if the printing industry is to realise the potential benefits for employers and employees of higher productivity and effective international competitiveness based on the use of state of the art technology by highly competent and motivated staff.

Competency-based training

Recommendation 2

The printing industry endorses competency-based training for industry and enterprise vocational competency standards, and seeks the full implementation of competency-based training in vocational competencies for all printing occupations from 1997.

The printing industry endorses the key competencies and seeks their development and testing by schools or TAFE as a part of all post-compulsory education and training pathways.

Recruitment standards

Recommendation 3

The printing industry recognises that technological change is driving a requirement for a new skill mix within the industry, and that the key competencies can be combined with aptitude tests for industry-specific skills to develop recruitment standards for the printing industry.

Flexible training pathways

Recommendation 4

The delivery of entry-level training for trade and non-trade staff up to Australian Standards Framework (ASF) level 3 should be through a variety of training pathways (see 4-3).

In appropriate segments of the industry, the printing industry would consider a vocational-training course in upper secondary school, involving the equivalent of one day of unpaid structured work-based training per week, where this is compatible with Year 12 certificate arrangements and appropriate for segments of the industry.

The printing industry also favours a vocational year in TAFE for Year 12 completers, with 60 per cent off-the-job and 40 per cent on-the-job training, followed by primarily on-the-job training (4 days work and 1 days study leave or the block release equivalent) for a reduced term specified in training agreements as the main pathways into the industry for trade and non-trade entrants at Australian Standards Framework levels 1-3.

A half-time work, half-time study pathway may be required for Year 10 or 11 leavers to enable them to develop key competencies as well as vocational competencies.

Training pathways need to provide for more recognition of trade and non-trade competencies attained at Australian Standards Framework level 2 through arrangements like Career Start Traineeships, and for articulation and credit transfer from lower to higher Australian Standards Framework levels.

Training agreements

Recommendation 5

The printing industry recognises the restrictions which existing apprenticeship arrangements impose on training for the industry and supports the provision of flexible training arrangements and agreements for trade and non-trade training, involving arrangements for the options outlined at recommendation 4. The training agreements will specify the obligations of employers and employees, including training wages agreed between employers and employees where applicable.

Delivery of quality entry-level training

Recommendation 6

The delivery of quality entry-level training requires closer co-operation of existing TAFE providers with the printing industry, continuing support from the printing industry for the TAFE colleges concerned, and a strategic co-operative development by TAFE and the printing industry of more effective arrangements for integrated assessment of on- and off-the-job training.

Existing workforce

Recommendation 7

The printing industry recognises the need for retraining of the existing workforce to equip those whose skills do not meet the changing requirements of the industry.

Technician/trainer/assessor training

Recommendation 8

The printing industry urges the early establishment of nationally consistent delivery arrangements for advanced level training for the printing industry, to meet the growing requirement for higher level competencies (Australian Standards Framework levels 4 or 5) in the printing industry workforce. The development of middle-level training should include arrangements for training experienced tradespersons and others with training responsibilities so that they are competent to deliver quality training and to assess trainees in their field validly and consistently. This training should be delivered through nationally co-ordinated arrangements, combining flexible delivery with limited training in residence.

Management training

Recommendation 9

The printing industry proposes the development of specialised modules of management training for the printing industry, which can be delivered as short courses for existing managers and included among the electives available in general management programs, by agreement with appropriate tertiary institutions.

Access and equity

Recommendation 10

Although the printing industry has a reasonably good record on access and equity, consideration needs to be given to measures such as flexible delivery arrangements which can improve participation in training by rural employees, casual and shift workers.

Assessment, certification and recognition

Recommendation 11

The printing industry supports the progressive integration of assessments conducted on- and off-the-job, starting with arrangements that are initially as simple as can be practicable, but gradually evolving towards arrangements which provide safeguards for quality assurance based in validity and consistency in assessment practices. The printing industry supports the development of nationally consistent certification arrangements, with a minimum of bureaucracy, and the National Framework for Recognition of Training (NFROT).

Printing industry training plan

Overview of the industry

1.1 A description of the printing industry and its scope

The printing industry has been principally concerned with printing, publishing and paper and paper products under the old Australian Standard Industry Classification (ASIC) code 26 as 263 paper and paper products sector and 264 printing and allied sector.

Table 1 provides a breakdown of the two principal ASIC codes into their component parts. These will be used as a basis for some of the statistics presented in this plan.

TABLE 1—A BREAKDOWN OF ASIC CODES 263 AND 264

Paper and paper products		Printing and allied industries	
2631	Pulp, paper and paperboard	2641	Publishing
2632	Paper bags	2642	Printing and publishing
2633	Solid fibreboard containers	2643	Paper stationery
2634	Corrugated fibreboard containers	2644	Printing and bookbinding
2635	Paper products (other)	2645	Printing trade services

The scope of the printing industry can, however, be expanded beyond these sectors. The following are a number of activities closely affiliated to these sectors:

- 2767 printing ink manufacture
- 3471 flexible packaging and abrasive products
- 3484 signs and advertising display
- 4736 machinery and equipment wholesalers
- 4794 books and paper products wholesalers
- 6382 advertising services
- 6384 typing, copying and mailing services.

The National Printing Industry Training Council (NPITC) has prepared a brief description of these sectors in a document entitled *Overview of the printing industry—1993*. These descriptions are provided in Attachment A.

New Australia and New Zealand Standard Industry Classification (ANZSIC) codes have recently been adopted. These include printing and services to printing (241), publishing (242) and paper and paper product manufacturing (233).

However, this plan will relate statistics to the more familiar ASIC codes in section 1.2.

In traditional terms the printing industry is segmented into two sectors:

- a general production sector; and
- a specialist sector concerned with a variety of processes and products.

The general production sector comprises three broad groups. These are:

- Origination (prepress)
- Printing Machining (press)
- Binding and Finishing (postpress).

The advent of the computer has led to a revolution in the prepress area and technological change is increasingly challenging the boundaries between the press and prepress streams. Binding and finishing has been least affected by technological and other changes. (Technological change is discussed in section 3.2 of this plan).

The specialist sectors are made up of a further fourteen groups. These are:

- small offset printing sector
- business forms, security printing, continuous stationery and other paper products
- screen printing
- newspaper production
- printing ink manufacture
- metal decorating sector
- book and magazine publishing
- desktop publishing or electronic publishing
- graphic design sector
- envelope sector
- cartons sector
- flexible packaging
- high speed commercial photocopying
- general packaging sector.

These groups make up (in whole or part) various groups described in the old ASIC and new ANZSIC classifications.

Within this traditional structure, the principal activity of the printing industry is the production, conversion or usage of predominantly paper products, but also a variety of other substrates.

Consultations prior to the preparation of this plan (see Attachment B for details) have established that the industry is perceiving itself more broadly than ever before. It retains a core focus on printing and services to printing (ANZSIC code 241), publishing (242) and paper product manufacturing (233). However, those consulted appear to regard the industry as increasingly part of the broader information services sector,

adding such elements as computer services (783), telecommunications (712) and marketing and business management (785).

This latter field includes such components as:

- advertising services
- commercial art and display services
- photographic studios.

Other areas may include applied arts and journalism. Thus art and a variety of other technologies are being increasingly mixed and matched.

Its major changes include a greater blending of a variety of other information media and services, together with a greater combination of the artistic component as a balance to technical and trade skills which computer technology has blurred, particularly in the prepress area.

The industry is presently characterised by rapid technological and structural changes and increasingly intensive investment in capital equipment which requires new approaches to company size, structure, work organisation, management and training to ensure both productivity and profitability.

The industry, too, is very diverse at present and likely to become more, so even if the potential of the links between printing, communication and information technology sectors presently under discussion is not fully realised.

The reform of the Industry Training Advisory Board (ITAB) networks and structures will also yield new affiliations between a variety of areas which will require that the national training plan and the State/Territory responses to it be kept under constant review.

1.2 An industry profile

By any measure the printing industry is a significant component of the manufacturing industry. Preliminary 1991–92 figures for ASIC codes 263 and 264 indicate that it makes up 11.9 per cent of manufacturing establishments, 11.1 per cent of employment and 8.5 per cent of turnover. These figures would increase if other appropriate ASIC codes were included (see Table 1.1).

TABLE 1.1 MANUFACTURING INDUSTRY 1991-92

	Number of est'ments	Employ-ment (000)	% change	Wages & salaries ($m)	Turnover ($m)	Turnover % change
Food, beverage & tobacco	4265	160.5	-6.0	4466	34839	+7.7
Textiles	959	26.3	-8.4	742	3961	-3.0
Clothing & footwear	2677	50.1	-10.5	1130	4887	-5.9
Wood, wood products & furniture	6718	72.3	-4.5	1700	7736	-2.0
Paper, paper prods, print'n & publishing	**5032**	**100.4**	**-3.2**	**3198**	**14290**	**-3.4**
Chemical, petroleum & coal products	1249	50.9	-4.0	1957	23279	-2.3
Non-metallic mineral products	1813	38.4	-3.0	1241	7506	-0.3
Fabricated metal products	6628	89.5	-7.4	2395	11639	-5.9
Transport equip.	2136	82.2	-7.0	2555	14441	-6.2
Other machinery & equipment	5961	115.7	-6.4	3483	16400	-1.5
Miscellaneous manufacturing	3933	59.6	-0.5	1654	8758	+2.6
Total	**42289**	**909**	**-5.7**	**26972**	**168839**	**-2.7**

Source: ABS, Catalogue 8201.0 Manufacturing census 1991-92 (preliminary)

While turnover in the manufacturing sectors has dropped 2.7 per cent overall, the printing industry experienced the fourth largest (and above average) drop in the sector. However, its turnover had risen 7.8 per cent in the previous year. Its fall in employment has generally been well below the sector average (see section 1.4 'Employment trends').

Based on 1991–92 figures for ASIC codes 263 and 264 the industry is concentrated in New South Wales and Victoria with nearly 70 per cent of the establishments between them. Queensland, Western Australia and South Australia have 13.2 per cent, 7.4 per cent and 6.3 per cent of establishments respectively. Tasmania, ACT and the Northern Territory account for the remaining 3.5 per cent of establishments (see Table 1.2).

The great majority of companies and tradespeople are located in the major capital cities, although Queensland and Tasmania have a greater proportion of companies placed in other centres (Table 1.3).

TABLE 1.2 THE PAPER, PAPER PRODUCTS, PRINTING AND PUBLISHING INDUSTRY 1991-92

State	No. of establishments	Percentage
NSW	2005	39.8
Vic	1502	29.8
Qld	664	13.2
SA	318	6.3
WA	371	7.4
Tas	84	1.7
NT	21	0.4
ACT	71	1.4
Aust	5036	100

Source: ABS catalogue 8201.0 Manufacturing Census 1991-92 (preliminary)

TABLE 1.3 PERCENTAGES OF COMPANIES AND TRADESPEOPLE IN STATE CAPITALS

Capital city	% of firms	% of tradespeople
Sydney	79.8	81.7
Melbourne	88.1	84.1
Brisbane	58.9	63.6
Adelaide	90.1	86.7
Perth	90.2	89.5
Hobart	52.4	42.0
Darwin	74.0	60.7
Canberra	100.0	100.0

Source: ABS catalogue 8201.0 Manufacturing Census 1991-92 (preliminary)

The Merton report (Merton, 1992) suggested that the last decade has seen an increase in the concentration of ownership in a variety of industry sectors. In particular:

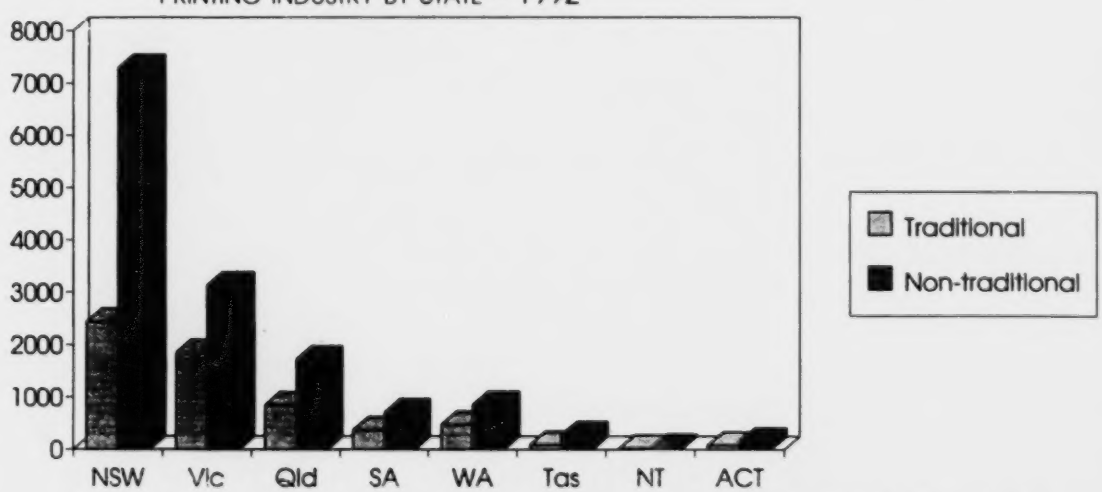
- the ownership base of the metropolitan daily newspapers is very narrow (they also control much of the suburban newspaper and magazine market);
- three corporations manufacture about all the paper and paper board produced; and
- eight enterprises produce virtually all the output of pulp, paper and paperboard.

While there has been some growth in the number of establishments in the commercial printing area there have been a number of major mergers and takeovers. It is believed by a number of those consulted that this trend will continue and, although the industry is one predominantly of small business, that commercial printers will have to get larger (at least in turnover terms) to justify the purchase and running costs of this capital equipment. This may mean amalgamations, takeovers or closures of smaller and possibly more marginal commercial printers.

In addition, government departments, including education and statutory authorities have significant design and printing capacity (which may be under-utilised). They also buy services from the private sector.

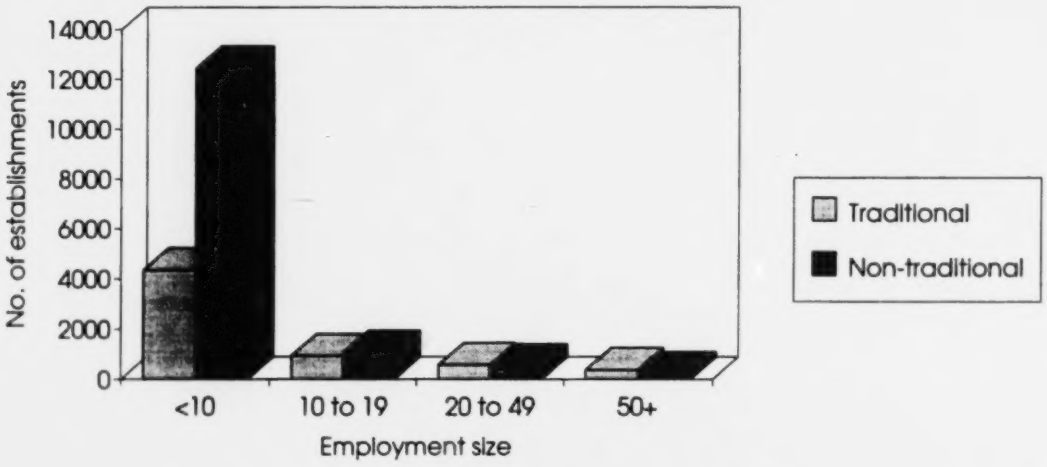
In terms of numbers of establishments, numbers in 'traditional' printing areas (ASIC codes 263 and 264), the majority are covered with printing and allied industries (code 264). However, Australian Bureau of Statistics (ABS) business register counts, as at August 1992, suggest that the 'non-traditional' areas outlined in section 1.1, but excluding printing ink manufacturers (2767) and machine and equipment wholesalers (4736), show that these 'non-traditional' establishments equal, if not greatly exceed, traditional establishment numbers (see Figure 1.1). In particular, the advertising services (6832), typing, copying and mailing services (6384) are particularly dominant members of the 'non-traditional' sector and are predominantly small (Figure 1.2). Nevertheless they are significant users of prepress technologies and, as markets change and new photocopier technologies are introduced, may be increasingly recognised as mainstream members of the industry.

FIGURE 1.1 NUMBER OF ESTABLISHMENTS IN THE TRADITIONAL AND NON-TRADITIONAL PRINTING INDUSTRY BY STATE - 1992



Source: ABS Business register (as at August 1992)

FIGURE 1.2 NUMBER OF TRADITIONAL AND NON-TRADITIONAL ESTABLISHMENTS BY EMPLOYMENT SIZE – AUSTRALIA, 1992



Source: ABS Business register (as at August 1992)

1.3 Industry structure and sectors

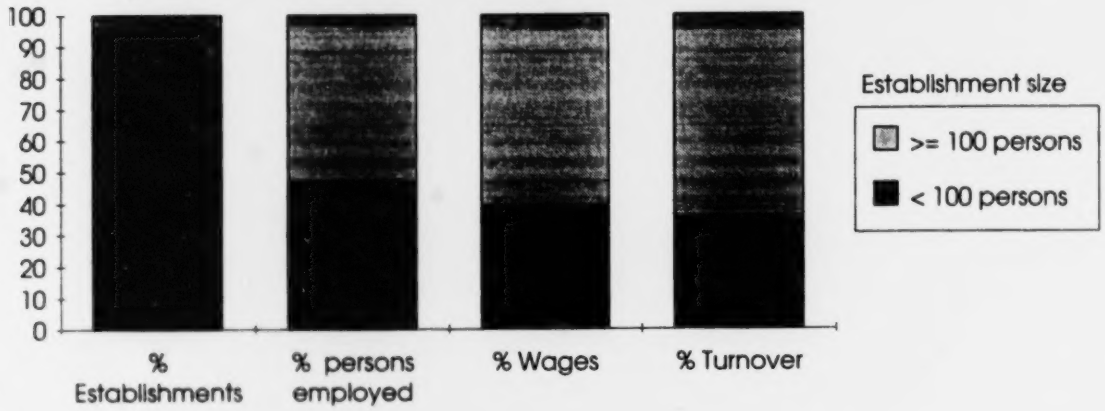
The industry is characterised by a wide range of company sizes. Most companies are small. In 1990–91 65.5 per cent of establishments employed nine people or less; 16.9 per cent of establishments employed 10–19 people, while 10.2 per cent employed 20–49 people. Only 7.5 per cent employed above 50 people and of this, only 4.0 per cent employed 100 or more. It is predominantly a small business industry. Possible changes to the area of coverage of the industry may increase this trend.

Nevertheless, while the industry tends to be dominated by small companies, (often family owned and operated) the 4 per cent of establishments employing 100 people or more account for nearly 53 per cent of employment, nearly 61 per cent of wages and just over 64 per cent of turnover (Figure 1.3).

A report by the Workplace Resource Centre (NSW) Ltd, 1991, showed that the numbers of establishments operating in the printing industry was declining through the 1970s. The 1980s were a period of growth in both establishment numbers and employment levels.

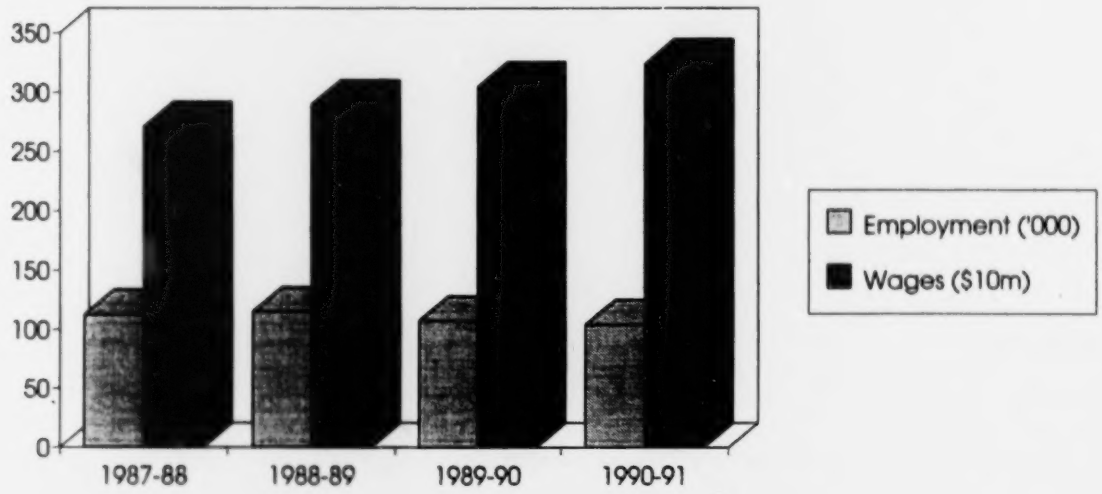
The general peak in both establishment and employment number was in 1988–89. Since then employment has declined, while turnover per person has steadily increased (Figure 1.4). This pattern is consistent with the cyclical downturn into recession Australia (and other countries) have been experiencing.

FIGURE 1.3 PROPORTIONS OF NUMBER OF ESTABLISHMENTS, NUMBER EMPLOYED, WAGES AND SALARIES, AND TURNOVER BY ESTABLISHMENT SIZE FOR THE PAPER, PAPER PRODUCTS, PRINTING AND PUBLISHING INDUSTRY AT 1990-91



Source: ABS Catalogue 8221.0

FIGURE 1.4 NUMBER EMPLOYED AND TURNOVER PER PERSON IN THE PAPER, PAPER PRODUCTS, PRINTING AND PUBLISHING INDUSTRY BY TIME



Source: ABS Catalogue 8221.0

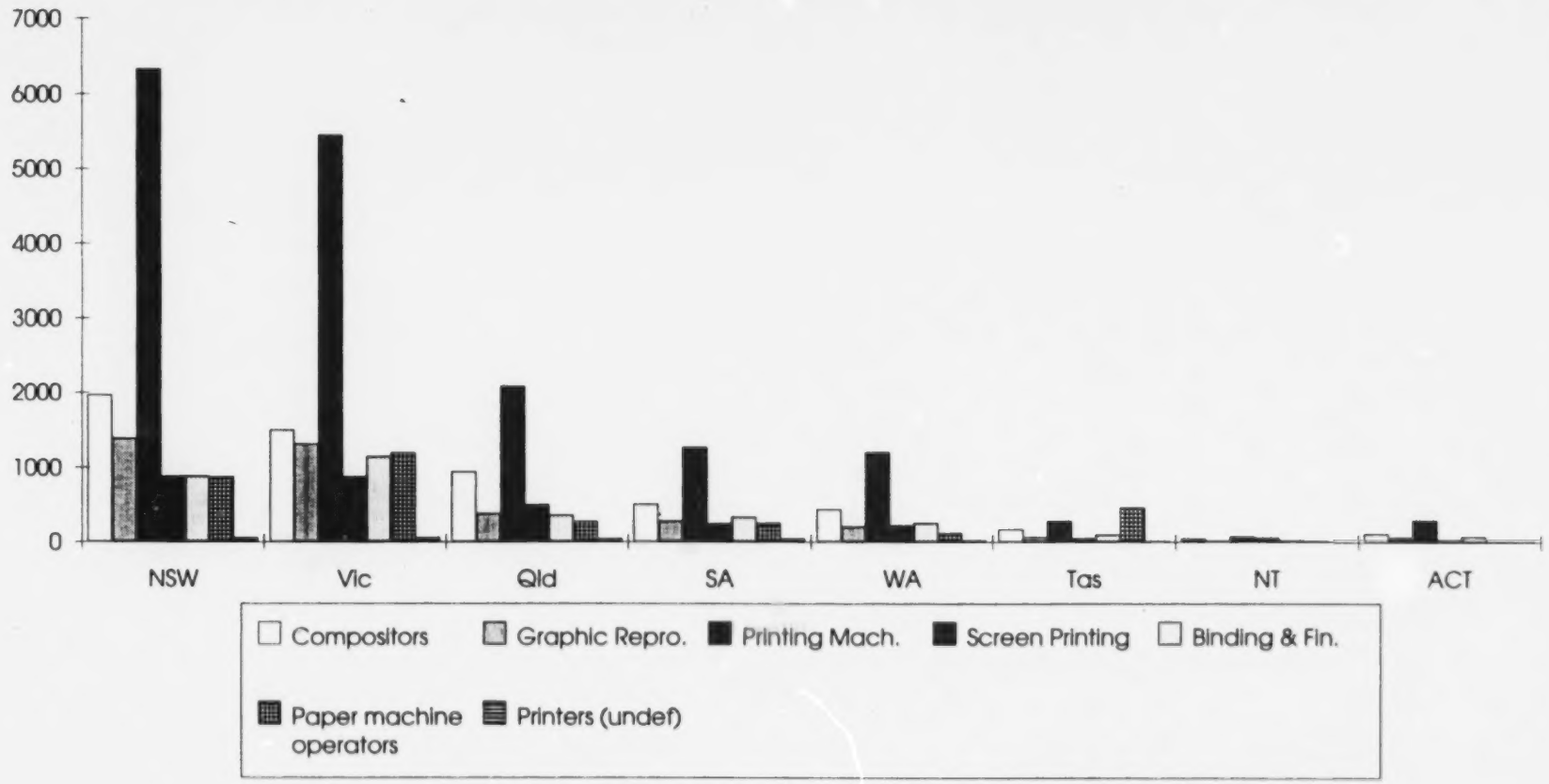
The majority of tradespeople employed in the industry are in the machining area, with the other trades of approximately equal size (Figure 1.5). The composition area is the largest of the four. No data are presented in relation to individuals at the operation levels or in other areas (management, sales etc.).

In terms of women's participation in the trades, the highest proportions are in composition and binding and finishing. Screen printing is next, with printing machining and paper-machine operations having relatively few women tradespeople (Figure 1.6).

The industry has a poor image as an employment option for school leavers. This was confirmed in our consultations. Nevertheless it rewards relatively well in comparison to other sectors of manufacturing (Figure 1.7) and probably also in relation to other employment options which some see as more desirable (e.g. tourism and hospitality).

Challenge: *The need for the industry to market itself better in order to improve the quality of initial applicants for entry. This factor also needs to be taken into consideration in the industry's approach to training delivery arrangements which are related to entry of young people into the industry.*

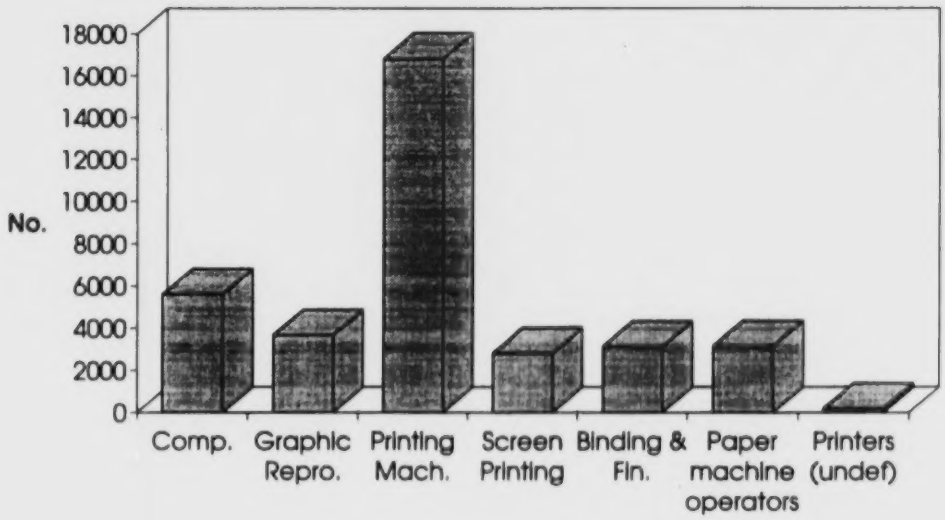
FIGURE 1.5 EMPLOYMENT OF PRINTING TRADESPEOPLE BY STATE (NO.)



25

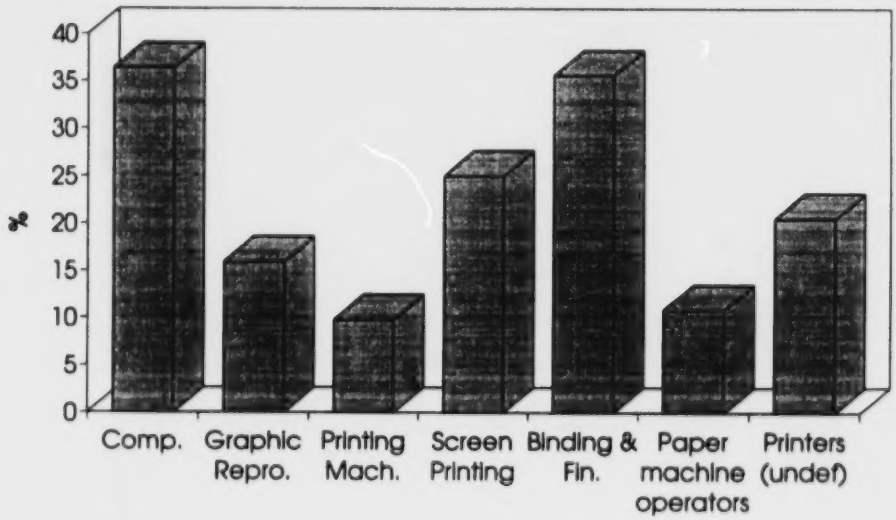
Source: ABS Catalogue 2731.0, 1991, Census data.

FIGURE 1.6 EMPLOYMENT OF PRINTING TRADESPEOPLE IN AUSTRALIA (NO.)



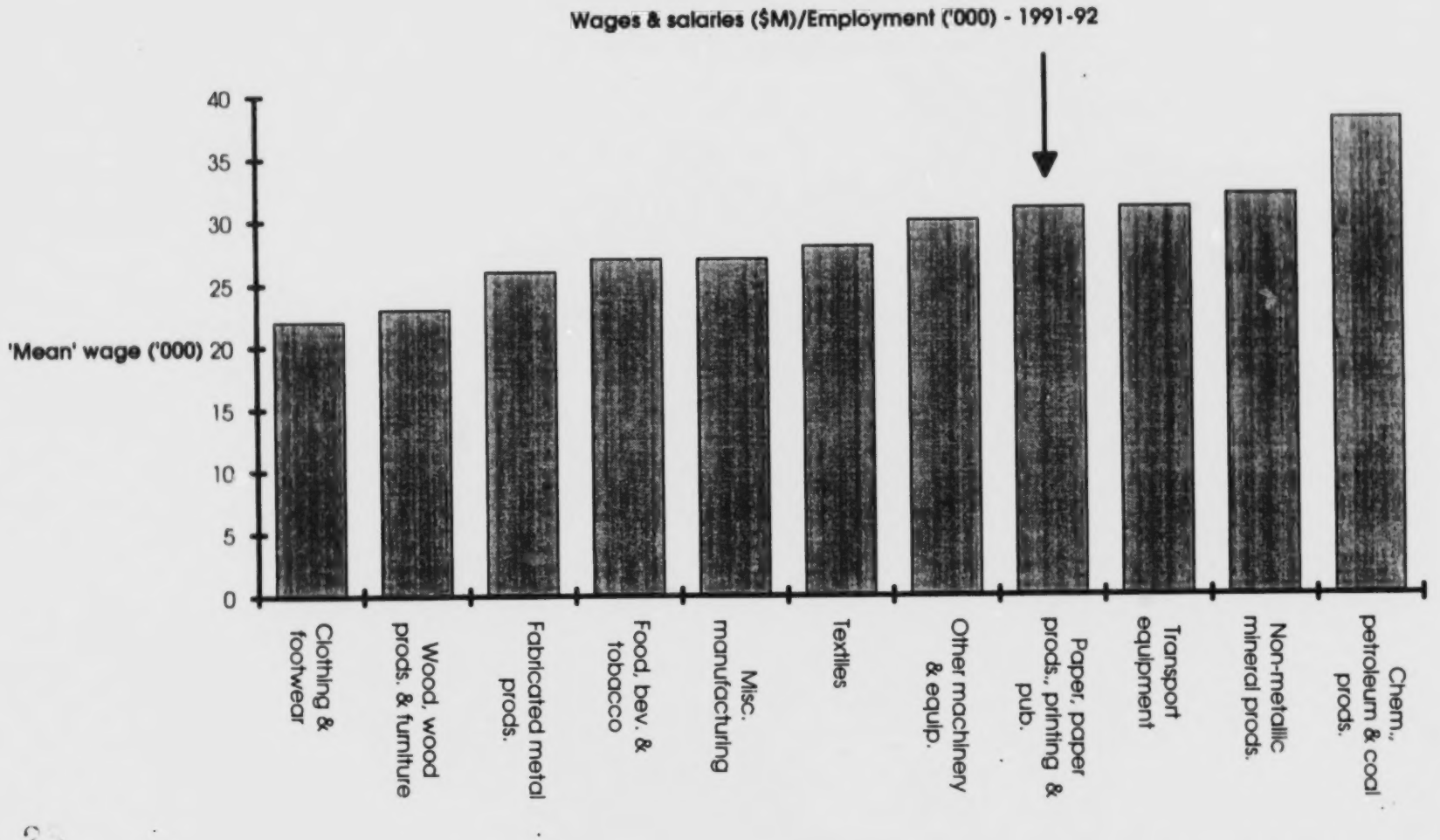
Source: ABS Catalogue 2731.0, 1991 Census data

FIGURE 1.7 PERCENTAGE OF WOMEN EMPLOYED IN EACH SECTOR – AUSTRALIA 1991



Source: ABS Catalogue 2731.0, 1991 Census data

FIGURE 1.8



Source: ABS Catalogue 6360.0

1.4 Employment trends

The recession has contributed significantly to the current state of play in the printing industry. An industry which has been characterised by restructuring, company consolidations, reduced staff numbers and company closures. A further contributor to the industry's current position has been structural change brought about, in part, by the overcapitalisation in technology. As highlighted in a recent Victorian Printing Industry Training Board (VPITB) report, 'there are specific forces operating in industry today'. These forces have been summarised as follows:

> *When an economy is booming and the demand for printing is strong, most companies are able to increase their level of production . . .*

When the growth in demand slows or goes into decline, production levels fall, there are lower rates of capacity utilisation and lower rates of return. Therefore, past investments in technology have contributed to a 'seriously overcapitalised' market which is attempting to 'service a temporarily smaller market'. Most employers spoken to in a recently published Department of Employment, Education and Training (DEET) labour market assessment for the printing industry in NSW believed that demand for printing services is slowly but steadily increasing in Sydney, while remaining flat in rural areas such as the Hunter and Illawarra.

DEET's skilled vacancies survey for November 1993 indicates that printing trades have had a relatively large turn around in vacancies. A comparison with October 1993 figures shows a 15 per cent increase in printing trade vacancies, while a comparison with November 1992 shows an impressive increase of 154 per cent, second only to the metal trades (201 per cent) and significantly larger than the building trades (64 per cent). As stated in the survey 'all occupational groups are at least 20 per cent above their recession low points, with printing trades recording a level almost 450 per cent higher.'

The DEET study of NSW labour supply in the printing trades suggests:

- a minor oversupply in the composition graphic reproduction and machining trades
- a minor shortage of binders and finishers.

Despite the oversupply of labour within this scenario, the consultations suggested that there is also a short supply of skills which are in demand. The task of assessing which skills are in short supply is, however, complicated and masked by the current labour oversupply. Notwithstanding the skill shortage and the steady recovery from the recession, rapid employment growth in the industry is not envisaged.

DEET's recent labour market assessment for the printing trades in NSW suggested that:

> *The supply of printing tradespersons is very reliant on domestic demand factors. It is also a sign that the industry only plans on a short-term basis, allowing present demand to dictate their future levels of skilled persons.*

This view was confirmed by our consultations, with a number of those consulted describing the industry as 'here and now' in its approach to this and other issues.

Failure to maintain 'essential training levels' has been identified as the primary cause of the current skill shortage. An examination of apprenticeship statistics shows that there has been a substantial decline in printing apprenticeship commencements/indentures. In 1987–88 there were 1499 commencements, this fell to 729 in 1991–92. This translates to a decrease of over 50 per cent in just three years (Figure 1.8). The number of apprenticeships cancelled/withdrawn also rose during the three years. In 1987–88, the figure was 275; in 1991–92 it rose to 352. It is impossible, with the statistics given, to determine whether the balance is more towards cancellation by employers or withdrawals by apprentices, as the data is not broken down in this way. An increase in demand for apprentices has, however, been predicted as the economy recovers (Figure 1.9).

Given this decrease in intake there may be shortages in the longer term as the supply of newly qualified trades persons dries up (the shortage looks likely to hit the industry in 1994–95). This may lead to pressures to import skilled labour from overseas. However the DEET study of labour supply in NSW suggests that labour market needs are balanced in all trade areas (except for a shortage in binding and finishing) over the next 12–18 months.

An additional characteristic of the industry, highlighted in the Merton report (Merton, 1992), is the high attrition rate for the printing trades. The study found that:

> *Two years after completing an apprenticeship only 72 per cent of those employed were still working in the trade. Twenty years after completing an apprenticeship only 36 per cent were still working in the trade.*

Therefore, the 'average industry employment rate of personnel holding trade qualifications in various branches of the industry is 51 per cent'. Reasons provided for attrition of older tradespeople include the 'inability to adapt to new technologies' and the 'stress of responsibility for very expensive equipment operated on constant short deadlines'. In a recent survey, conducted by the NPITC, third year Victorian apprentices were asked how they believed skilled tradespeople could be kept in the industry. Responses included:

- develop more structured career paths
- develop more on-the-job training
- develop varied job tasks to make the job less boring
- improve worker/management relations
- structure jobs so that they reflect future needs
- more access to high technology across the industry
- more on-the-job training for apprentices
- improved salaries
- improved working conditions.

FIGURE 1.9 PRINTING APPRENTICESHIP COMMENCEMENTS/INDENTURES AND CANCELLATIONS FROM 1982-83 TO 1991-92

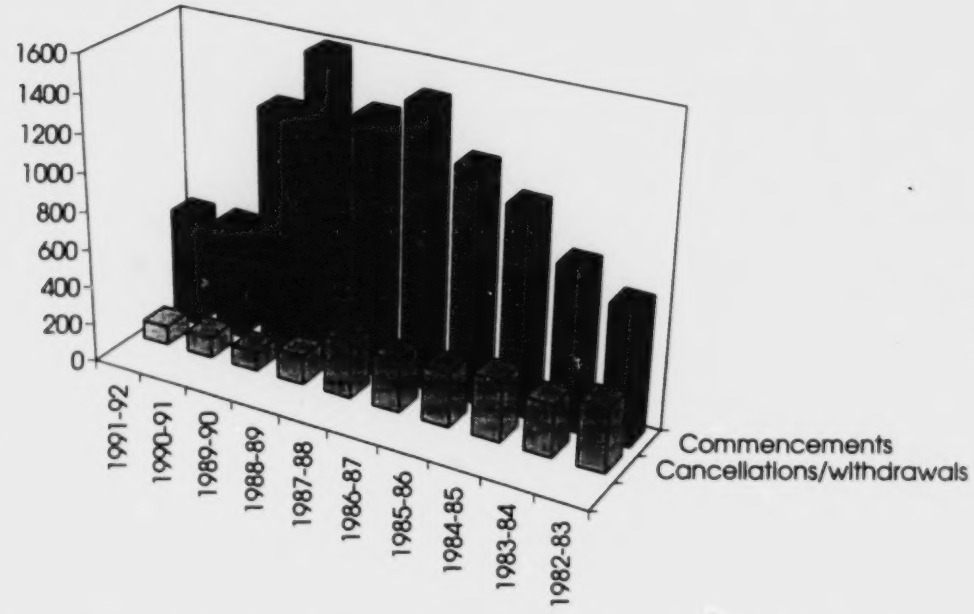
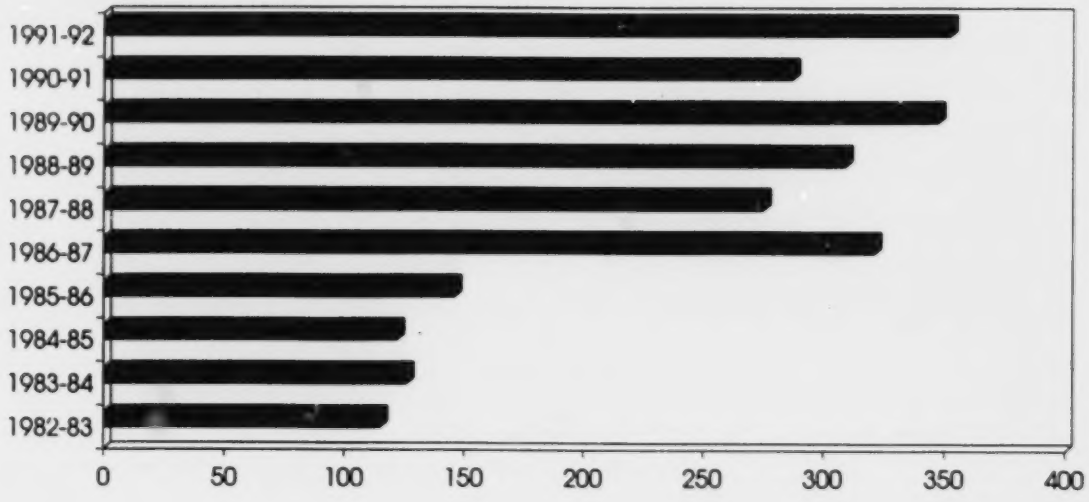


FIGURE 1.10 PRINTING APPRENTICESHIP CANCELLATIONS/WITHDRAWALS FROM 1982-83 TO 1991-92



Source: NCVER Apprenticeship statistics

Apprenticeships cancelled refers to the termination of a contract after the probationary period. This includes the termination of trainee apprenticeships in New South Wales.

Apprenticeship withdrawal refers to persons who leave trade training during the probationary employment period.

Source: NCVER Apprenticeship statistics

Current training provision

2.1 Current training provision

The NPITC has published a report which documents the range of training in the printing industry in Australia (Thorn, 1992). The report covers the art and design sector, screen printing and prepress, press and postpress trades. In addition, paper industry courses (ASIC 263) are included. Australian Traineeship Scheme (ATS) training in small offset and programs offered by a range of private providers (e.g. Intech, John W Drake Consulting and Training), industry associations (e.g. PATEFA), and suppliers (e.g. Heidelberg Australia, AM International, Collie Cooke) are also considered. This report therefore represents an excellent account of the training provision in the industry and it serves little purpose to reproduce much of it here.

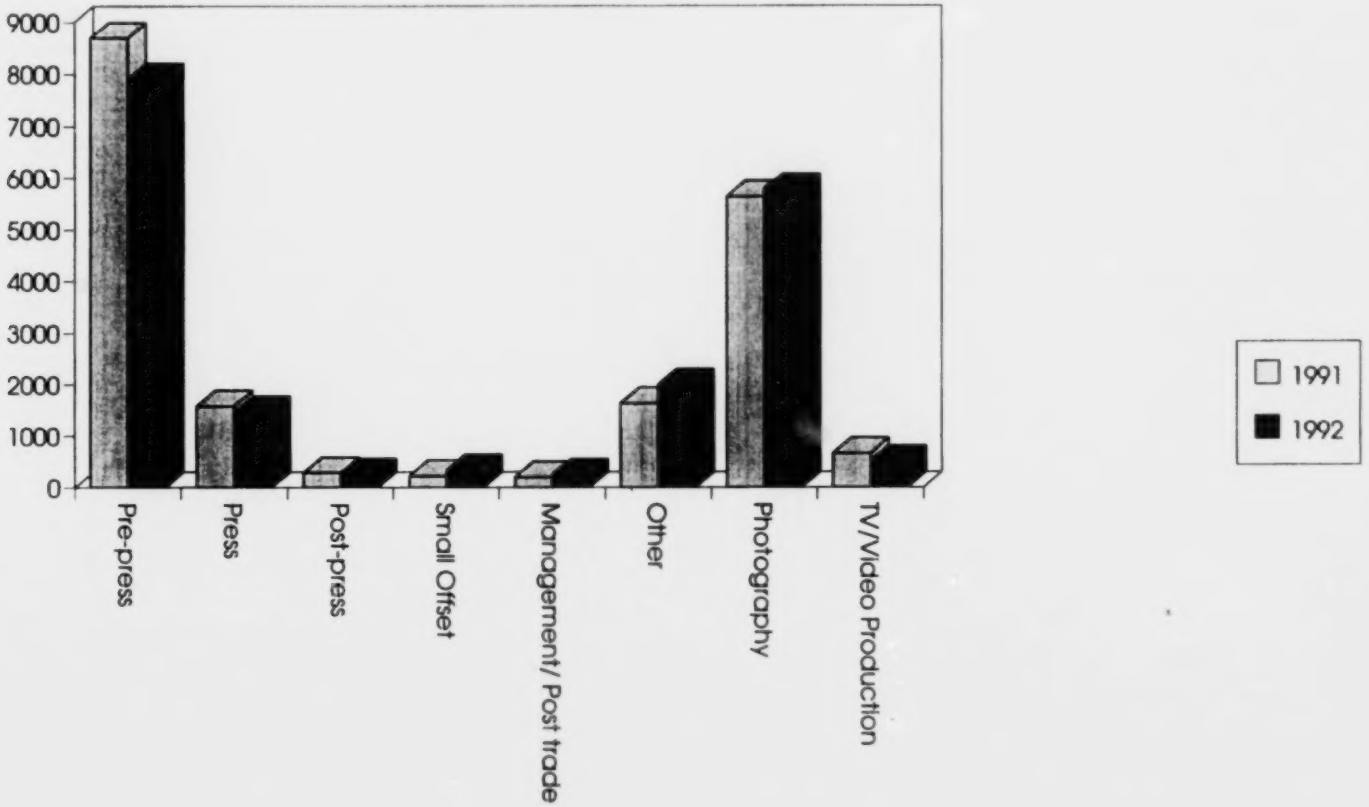
In brief, the current arrangements for entry-level training in the printing industry generally consists of off-the-job training for trades apprentices or ATS trainees, usually provided by TAFE. TAFE provides printing industry trades training in every State or Territory capital except Darwin, in concentrated arrangements in each capital city because of the cost of equipment. Further information about numbers in training are provided in Figures 2.1, 2.2 and 2.3. Figure 2.1 graphs the number of students in printing and printing related courses in Australia in 1991–92. Figure 2.2 graphs the number of students taking shorter (less than 640 hours) printing and printing-related courses in Australia in 1991–92, while Figure 2.3 graphs the number of students taking longer printing and printing-related courses in Australia in 1991–92. Longer courses are usually (but not exclusively) trade courses. (Gender breakdowns of these participation data are provided in section 3.5.) (see Attachment D)

TAFE provision is often seen as being too rigid and slow to respond to industry developments. However a number of the institutions have been experimenting with more flexible arrangements in the delivery of programs and with their mainstream fee-for-service activities. The ATS was not warmly received by the printing industry, although a national small offset traineeship has been sustained. Prevocational programs have been developed and implemented in some States, but are not available in others. Group training arrangements, while not impossible, have also met with considerable union resistance.

Some (usually larger) enterprises provide enterprise-specific training, some of which is formally accredited, and PATEFA and other private providers (notably equipment suppliers) are also involved in industry training. A number of organisations offer programs in desktop publishing. PATEFA provides programs in management training, sales and marketing, occupational health and safety, quality assurance and a range of other programs of interest to its members. Most non-trade, in-house, on-the-job training can be seen as unstructured 'sitting next to Nellie' style training.

FIGURE 2.1

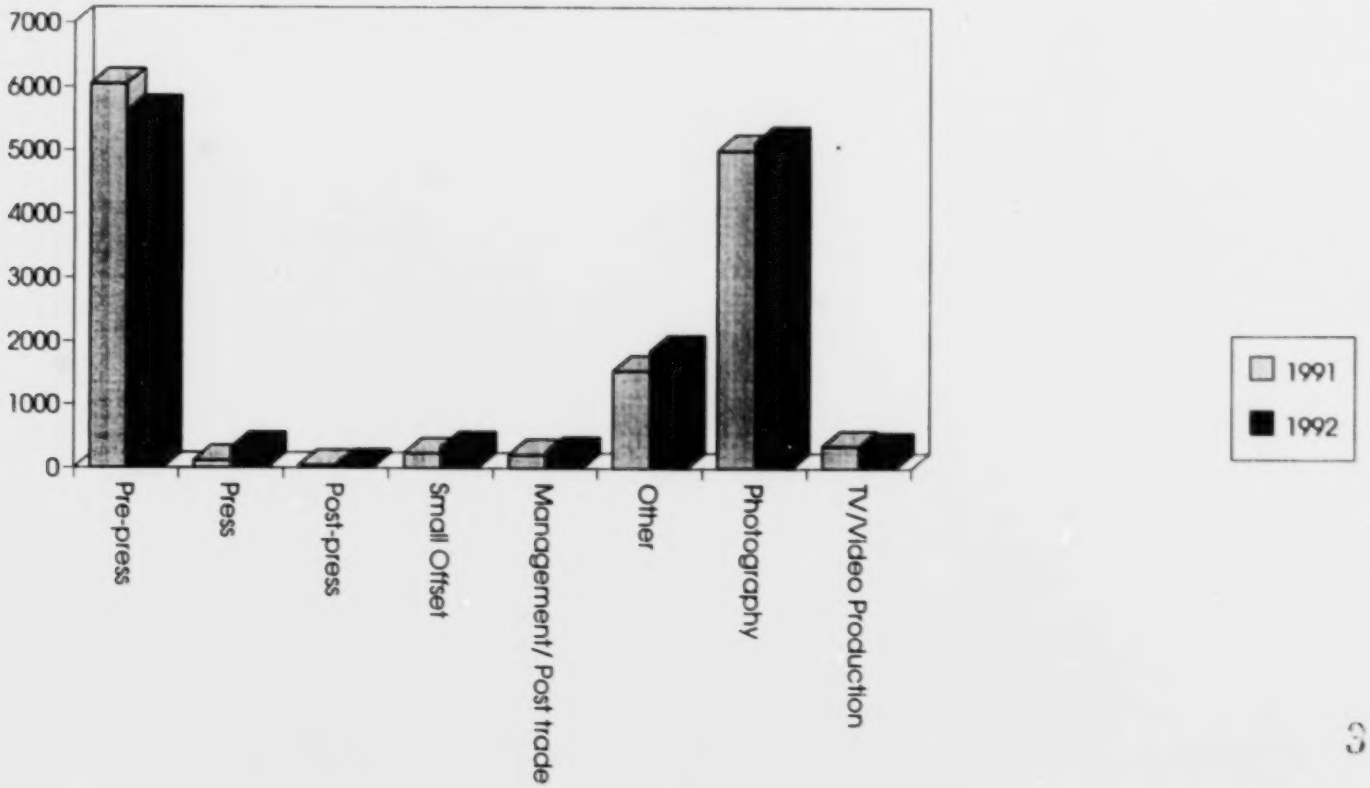
Number of students in printing and printing related courses - Australia, 1991-92.



Source: NCVER TAFE statistics

FIGURE 2.2

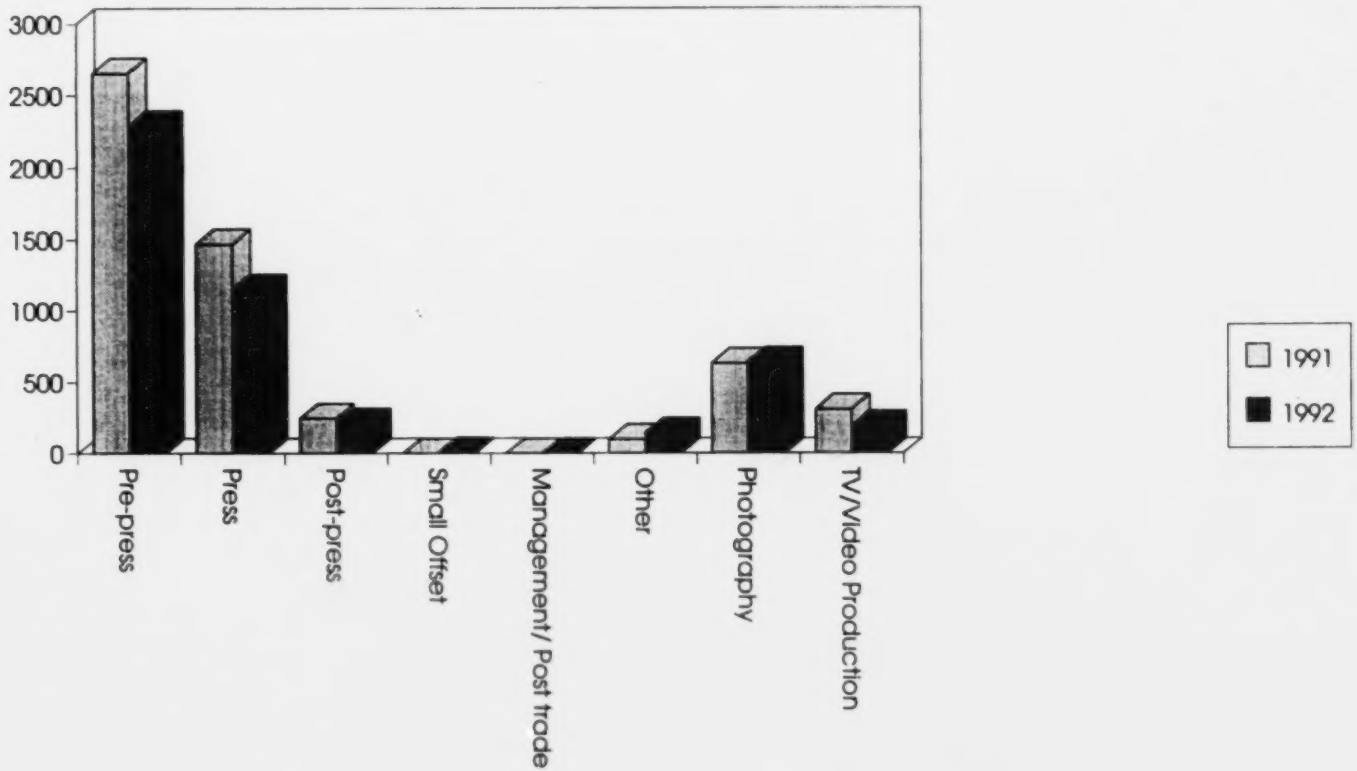
Number of students in printing and printing related courses with less than 640 Australian Standard Contact Hours, Australia 1991-92.



Source: NCVER TAFE statistics

FIGURE 2.3

Number of students in printing and printing related courses with greater than or equal to 640 Australian Standard Contact Hours - Australia, 1991-92.



Source: NCVER TAFE statistics

As well as entry-level training, current printing industry training arrangements include limited provision of advanced certificates and other post-basic courses through TAFE, and general supervision and management programs by PATEFA, private providers, TAFE and universities. Art and design courses are also offered at a number of universities. These latter programs are usually not closely geared to market demands.

The existing arrangements do not seem to be adequate to provide good entry-level training in the vocational and generic key competencies, nor for the subsequent adaptability and career path development of the workforce. Formalised operator level training is particularly poorly served as with a number of other trade-based industries, for example, building and construction. Proposed changes to training arrangements, particularly related to the implementation of the Australian Vocational Certificate (AVC) are described in section 4.3.

Thorn (1993) has recently completed a survey of on-the-job training in the printing industry in NSW for the NPITC. While restricted to NSW, the study would appear to have wider applicability. The report of the survey is presently in draft form.

Thorn points out:

> *With the move towards competency-based training, on-the-job training has become a focus of concern.*

Traditionally much of the available training has been for tradespeople, although they only represent a third of those in the workplace and half of those in production. Most operative staff are trained on-the-job (Thorn, 1993).

Moreover much of this training appears to lack sufficient structure and rigour and does not necessarily lead anywhere. The tone struck in Thorn's report is one of a here and now and generally poorly planned and executed on-the-job training program. This, in turn, engenders a degree of general dissatisfaction in staff (and particularly non-trades people) in relation to their training and career opportunities and, indeed, the extent to which they feel that their skills and abilities are being used appropriately, and enhanced. Many seem not to feel fulfilled.

While some sampling problems are acknowledged, the survey has made the following findings:

- Most training takes place during production time. In most cases training is conducted by supervisors or tradespeople—less often by specialised trainers brought in from outside the company. Training aids appear not to be used to any great extent. Those used are mainly workshop manuals or handout notes.
- There were generally limited opportunities for all staff in companies to have access to further training. In most organisations it was reportedly restricted to 'some staff', apprentices and trainees only, management only or apprentices, trainees and management.
- Most found their on-job training effective, although the operative group was least satisfied (45 per cent). About 60 per cent of those who had received training found it relevant. Again operators were relatively dissatisfied (42.6 per cent). Generally there was little follow-up to workplace training.

- Little on-the-job training had any formal assessment component—although it is more likely that formal assessment will recur in larger companies. Relatively few of those responding thought their abilities were properly recognised by employers or supervisors (34.3 per cent); many (29.4 per cent) were unsure. Just over 36 per cent felt their abilities were not properly recognised.
- There is some evidence that staff would like more opportunities for job rotation and multi-skilling as a form of on-the-job training. Staff were roughly equally split on whether they would prefer to do a wider range of jobs against those who were happy with their current situation. However only 40.6 per cent felt they had been given the opportunity to learn other jobs in the workplace. While a few (4.6 per cent) reported they declined the opportunity, nearly 55 per cent did want that opportunity.

2.2 Skill shortages

Future skill shortages identified by those consulted and surveyed are diverse and cover a broad spectrum of the industry. The two major factors contributing to skill shortages are the decrease in the number of apprentices (influenced by the recession) and the implementation of new technology.

The decrease in apprenticeship numbers is already starting to have an effect on the industry as the economy improves. The shortage of apprentices will be increasingly noticed if there is a sustained upswing in the economy.

The printing machining sector has been particularly hard hit by the reduction in the number of apprentices. To make up the shortfall a number of organisations had to recruit printing machinists and printers from overseas. This has proven to be an extremely costly exercise.

It is also becoming increasingly evident that there will be a number of future skill shortages directly linked to technology. A large proportion of companies who have purchased new prepress computer equipment, for instance, have not made the corresponding provisions for training. As a result, many employers are now having to retrain current workers because they cannot find workers who possess the appropriate skills.

There is no doubt that the industry is generally becoming more technically focussed and therefore needs people who are also equipped to use the technology efficiently. As technology becomes cheaper and more affordable to a wider segment of the industry, the demand for people with skills to run the high technology equipment will increase.

One of the major problems the industry currently faces, as identified during one consultation, is the:

> *Ability by employers to forecast and provide training related to technology versus the pace at which technology is changing.*

New technology is also creating a need for people who possess technician-type skills. That is, there is an increasing demand for workers who are computer literate. Workers with systems knowledge will be needed to maintain and run electronic high technology equipment. It has been stated that technician and management-type skills will become increasingly important in all stages of the printing process. New technology and its impact on the workplace will therefore need to be considered in all areas of training if a shortage of high technology computer skills is to be averted.

The need to develop superior management-type skills in the industry is also becoming vitally important. While this is not an entry-level issue it is a critical issue with which the industry needs to deal. Management training in the printing industry has been neglected. This is currently causing problems in the industry and will continue to do so unless appropriately addressed.

While consultations suggest that there is an oversupply of workers in the production area (also due to the recession), it is still difficult to find highly skilled production workers. It is not uncommon for tradespeople to leave production to move into less stressful and more 'comfortable' sales positions. As a result, industry loses talented and skilled workers who are, in turn, not being replaced by apprentices.

Industry members who participated in the mail-out survey and consultations undertaken as part of the research for this plan (see Attachment B) identified a broad range of specific skill shortages. These included shortages amongst:

- qualified tradespersons
- computer literate workers
- graphic artists (mac operators)
- multi-skilled workers
- electronic publishing design
- workers who are able to marry old skills to new technology
- letterpress and flexographic printers
- press operators
- binders
- prepress—reproduction
- web offset operators
- lithographers
- qualified machinists.

Other skill shortages which were identified can be categorised into a more generic grouping. Technology, in particular, will play an increasingly important role in the demand and, therefore, development of generic skills. As identified in the NPITC (1991) report *Technical change and skill formation in the printing industry*, the traditional skills of the print worker are being increasingly diluted and new and different skills are becoming increasingly important. New skills in demand include team-based skills, communication, problem-solving and management-type skills. While some workers in the industry may already possess such skills, they are lacking in the broader context of the industry.

The development of 'key competencies' in the future training effort of the industry is likely to help to overcome some of these difficulties. As part of the mail-out survey, participants were asked to describe how essential it is for new employees within their organisation to possess 'key competencies'. Results are presented in Table 2.1. All of the key competencies are seen as being 'essential' or 'useful'.

TABLE 2.1 THE VALUE OF 'KEY COMPETENCIES' WITHIN THE PRINTING INDUSTRY

Key competency	Essential (%)	Useful (%)	Not needed (%)
Collecting, analysing & organising information	**46.7**	45.7	7.6
Communicating ideas & information	**72.0**	26.9	1.1
Planning and organising activities	**54.8**	40.9	4.3
Working with others & in teams	**83.9**	16.1	0.0
Using mathematical ideas & techniques	17.4	**65.2**	17.4
Solving problems	**71.0**	28.0	1.0
Using technology	**78.5**	21.5	0.0
Cultural understanding	24.7	**59.2**	16.1

The data clearly indicates that new entrants into the industry will need to possess a wide array of generic skills. Of particular importance will be working with others and in teams, using technology, communicating ideas and information and problem-solving. While such competencies were rated by the majority of participants as essential, the other competencies were also seen as being useful. Results in the 'not needed' column were of a very low percentage overall (see section 4.2).

Other qualities sought from people entering the industry include initiative and drive. It has been stated that while there are many people in the industry who can reach trade level, there is a shortage of 'high achievers' in the industry. There is a growing need for higher achievers who can use their intellect continually to build on their knowledge.

It is also worth noting that a number of participants felt that there will not be a shortage of appropriate skills in the future. This is, however, dependent on employers keeping up with the necessary training.

2.3 Why change?

An issues paper was prepared and circulated to those involved in the consultation process. The paper related to the preparation of this industry training plan and raised the following question:

> *How can the Australian printing industry actively prepare to meet the future skills needs of the industry instead of reacting to external forces?*

In order to provide an answer to this question it is necessary to explore the industry's past behaviour.

The printing industry, as a whole, has not yet fully embraced the notion that training is an essential element of survival and future prosperity. While many organisations are coming to realise the importance of training (and are becoming pro-active), there are numerous others who still need to develop a training culture. This view is supported by Merton who states that there is a 'general lack of long-range perspective in training planning and activities among industry employers, particularly among the smaller companies.' Unfortunately, one of the first things the industry has tended to cut back on during economic downturns is training and the hiring of apprentices. This lack of foresight tends to create problems for the industry, particularly in times of economic prosperity when skill shortages abound. The industry training plan therefore needs to address the question of cyclical fluctuations in apprenticeship commencements. The provision of training in the industry will also have to change from being upfront with little follow up to that of a continuous learning/training process.

Challenge: *Industry, as a whole, must adopt a training philosophy and maintain at least a minimum trend level of training so that there is a sufficient pool of skilled and highly educated people for the future.*

As stated in the *Industry training plan of the Printing Industry Employment and Training Council 1994–96* (Western Australian Printing Industry Employment and Training Council 1993).

> *Without having an appropriate training culture and without the appropriate training and labour-market strategies, particularly for the period 1995–2000, the industry may not be in a position to fully benefit from its significant growth potential.*

It will be essential for industry to develop and promote a commitment to training if it wants to attract people with higher qualifications. Industry needs to make itself more appealing to potential applicants and, in turn, market the industry as an option which can provide real opportunity.

Results from the mailout survey clearly show that employers are placing more importance on higher level qualifications than ever before. In fact, when asked how would you foresee future trends in the printing industry affecting the level of qualifications expected of employees entering their organisation, a significant 65 per cent stated that a higher level would be expected, while 30 per cent indicated that the same level would be required. Only 5 per cent felt that a lower level would be required.

While computer technology is having a large impact on industry's need for new skills, in many ways industry will be forced to change, simply because of its changing relationship to other industries (e.g. telecommunications, information etc.). Its relationship to other non-traditional sectors of the industry (refer section 1.2) will also have a great impact on the industry. The printing industry is in a sound position to embrace these changes. The trends have been identified and the industry is challenged to prepare and embrace new philosophies. Of particular importance will be the need to accelerate the rate of learning and the usefulness of training. Given the appropriate commitment there is every reason for confidence that industry can achieve significant improvements in partnership with training providers.

TAFE is also in a good position of change within this scenario and there is no doubt that it will need to change. In a way, the colleges have already been restructuring to incorporate such areas as graphic art, technology and a range of others into their programs. TAFE is therefore already well positioned to take advantage of the shifts taking place in the industry.

Challenge: As long as it becomes more flexible and continues to become more relevant and meet industry's changing needs.

There is a need for training in the printing industry to become more integrated and systemic. It is not uncommon for apprentices all over Australia to be offered different training programs. As well as hindering mobility within the industry, this also prevents the establishment of appropriate standards for tradespeople within the various sectors of the industry.

If the industry is to become truly competitive, training in the future must become standardised and more focussed. There are changes in the pipeline, which won't be fully implemented until 1996. From 1996:

- a national curriculum will be delivered to all printing trades apprentices attending TAFE colleges throughout Australia;
- all training relating to trades apprenticeships will be competency based; and
- all apprentices will be assessed against the same standards.

Such a co-ordinated training program should ensure that all tradespeople are trained to an approved standard.

The current (as opposed to future) training system could also be improved if some of the existing training programs (i.e. for prepress) could be taken a step forward and adapted and embraced by other areas. That is, training programs need to be developed with a more global and holistic view rather than in segmented pieces, as they currently are. This would also allow for a greater mix and match of programs at a variety of different levels.

The need for more flexible training delivery has been stressed many times during the consultation process. It is not uncommon for TAFE to be criticised for its lack of flexibility and slowness to respond to industry developments.

While many TAFE colleges have responded to these criticisms and are genuinely making an effort to improve their level of service by working more closely with

industry and improving their equipment and technology, some members of the industry still believe that TAFE has not gone far enough.

The mailout survey revealed that just over 60 per cent of participants felt that TAFE was either successful, quite successful or extremely successful at responding to industry developments. This compares to a significantly less proportion (36 per cent) who felt that TAFE was not very successful in achieving this objective. Therefore, there is still a relatively high proportion of the industry who feel that TAFE still needs to respond quicker to industry developments and become more relevant to the times (particularly in the traditional trade areas and areas relating to technology).

Consequently, it has been suggested that there is a need for:

- more of a practical tie up between TAFE and schools;
- more information to be exchanged between employers and the colleges;
- a closer bond to be developed between on-the-job and off-the-job training; and
- the development of specialty courses which are more relevant to industry.

It has also been suggested that TAFE needs to incorporate more futuristic training into their courses rather than concentrate on areas which are becoming less relevant in the workplace.

In turn, TAFE instructors also need to get further involved and become more aware of industry developments. Suggestions made during consultations as to how this could occur include instructors undertaking up-to-date refresher courses, particularly in the high technology area. Such courses could possibly be provided by equipment suppliers. Other courses which could be developed for trainers include quality awareness and environmental courses. Instructors could also build on their knowledge of the industry by spending more time in the workplace. A recent report commissioned by the TAFE National Staff Development Committee (Preddle and Associates 1993, *Return to industry*) has addressed this issue.

As a further option, equipment suppliers could also enter into a strategic alliance with TAFE. Such a partnership could provide advantages for both parties. For example, it would allow TAFE access to the latest technology, while suppliers could get access to educational expertise relating to the installation of equipment and the skilling of the workforce. TAFE could also undertake an R&D role as many suppliers are often unaware of the capacity of what they are marketing. It is not uncommon for industry to find more creative uses for their equipment, over and above that specified by suppliers. Such a strategic alliance may indeed be a viable path for providers of training to take.

In terms of training provided by suppliers and private providers, on the whole, those consulted did feel that there was a need for such training. However it was stated by a number of participants that the two providers need to be carefully monitored.

In terms of private providers, it was felt that there is a need to make sure that they are providing adequate training and at least meeting minimum standards. In addition, the quality of delivery and content need to be monitored. As stated during one consultation, training provided by private providers is often unaccredited and not regulated.

Another participant stated that, at present, 'There are not sufficient controls or checks with this kind of training. This kind of training needs to come in line with NFROT'.

Other problems identified during consultations with respect to alternative trainers to TAFE, included:

- supplier provided training has a role, however, it can be very expensive—'there is a role but at a price';
- a number of trainers are after the fast dollar, therefore training is sometimes secondary to the dollar;
- training needs to be pitched at the right level, sometimes supplier training can be too technical or academic.

While there are many areas in which TAFE still has to develop, consultations revealed that TAFE has served the industry well and as a result is well regarded by the industry. TAFE is valued as it provides students with the ability to achieve a common standard and it offers a system with which employers are comfortable. It also provides a quality, structured training system which incorporates a strong theory base.

Unfortunately, even though TAFE is attempting to become a more flexible provider of training and is structuring courses more in line with what industry is demanding, one of the major barriers to the provision of more flexible training arrangements is that the only real structured entry-level training available is through the apprenticeship system.

Some see TAFE as being caught in a 'catch 22' situation. Even though TAFE realises that it must change the way it delivers training to the industry, one industry person consulted said that TAFE is limited in what it can and cannot do by formal agreements between TAFE and the industrial parties.

There is no doubt that as the industry changes many employers are finding the apprenticeship system too limiting. Weaknesses identified during consultations relating to the current apprenticeship system include:

- delivery arrangements are very inflexible;
- it only addresses some occupations;
- it does not incorporate flexible exit points;
- they are very strongly tied to the industrial system;
- it does not allow for a self-paced program of learning (although this can be arranged);
- block release is a problem for a number of employers (on the other hand, day release does not suit other employers);
- apprentices often only 'sweep up' for the first six months of their contract through lack of appropriate skills;
- some employers, because of lack of time or skills, do not provide apprentices with the appropriate on-the-job training;
- growth within the industry is outside the traditional areas, therefore as this continues apprenticeship style training will become less and less relevant.

Consequently, in order to complement the changes occurring in the industrial arena, training, in turn, needs to be modernised (see section 4.3).

Printing industry training plan

Future industry trends and training needs

3.1 The government policy and economic context

The national training reform agenda provides a broad policy framework to which it is appropriate that a training plan for any industry needs to relate. Despite some differences of opinion on some details of importance, the fundamentals of the training reform agenda are broadly supported by the major industry peak councils, by all major parties and by governments at Commonwealth, State and Territory levels.

One of the most severe effects the downturn in the economy has had on the industry has been the decrease in the number of apprentices in the industry. A lot of employers simply did not take on apprentices during the recession and unfortunately, as stated during several consultations 'they are paying for it in the long-term'.

The lesson learnt from this experience is that the industry will need to plan a great deal more than it has in the past, for its future. As stated during one interview, 'the industry needs longer latitudinal labour market planning.' In terms of apprenticeships, the industry will need to make sure that numbers are kept to a minimum level so that there is a pool of skills that the industry can call on during periods of economic recovery.

Also stated during the consultation process was that the recession forced many companies to work with less people and in many cases it forced companies to work differently. For example, many organisations are increasingly emphasising the need for more team-work. As a result, the industry is asking people to work differently.

In terms of the current and future state of the economy, there was a general feeling that the economy is improving and that as the economy improves, there will be an increasing need for apprentices. However, it was pointed out by one participant, that while a strengthening of the economy will lead to an increase in the demand for 'printing services' the spread will be more in volume terms rather than in terms of an increasing labour content.

An event which is predicted to have positive consequences on the industry (particularly or specifically the industry in NSW) is the Year 2000 Olympic Games. It was predicted by one industry member that this event will increase the demand for printers in the State.

Merton (1992) in his report *A review of the Australian printing and allied industries* provides an analysis of the future of the industry in an economic context. In the report he states:

> *A recent analysis of the industry by economic analysts SYNTEC gave rise to a prediction of a short-term recovery which will lead to a stable situation though to the mid-90s. General forecasts through to 1994/95 show an increase of real output in 1991/92 of 7.7 per cent gradually tapering to 3 per cent in 1994/95. Prices, employment and export volume all show the same general trend, with share of manufacturing output remaining stable at almost 11.4 per cent.*

The economic context of a more open Australian economy and more vigorous involvement by Australian industry in the international economy provide key environmental parameters within which the future of the Australian printing industry and its need to sustain improving international competitiveness are to be considered.

Future industry trends, particularly within the next five to ten years, will be shaped by changes in the diverse and complex impacts of technology, industrial relations and the labour market.

Each will have different implications for each sector of the industry, particularly in relation to training needs.

This in turn implies changes in areas such as skill requirements, career pathways, training of staff, workplace organisation and structure, and recognition of skills.

3.2 Technological change

Technological change has also brought with it an air of unpredictability to the printing industry. As stated during one consultation, some sectors within the industry 'don't know what sort of industry they'll be dealing with in six months time.' Therefore, the introduction of new technology into the industry also implies changes to work organisation, job structures, skill requirements and training programs.

As organisations within the industry attempt to gain the greatest benefits from new technology, many traditional skills, once highly valued and the cornerstone of the industry, are fast becoming obsolete. As a result, there is an increasing emphasis on intellectual skills and an 'upgrading of the general skill level of the printing and publishing workforce' (Cahill [Ed], 1993) (needed to operate advanced technology) and less demand for manual craft skills (once vital in the past). This trend is evident in the Federal Republic of Germany where the number of unskilled printing workers has decreased from 30.2 per cent of the workforce in 1972 to 24.8 per cent in 1983 (Cahill [Ed], 1993).

The workforce of the future will therefore need to be computer literate, they will need to possess more generic type skills (e.g. literacy, numeracy) and they will need to develop team-based skills. The increasing use of computers will also make it necessary

for workers to learn desktop skills, to develop a comprehensive understanding of computers and to become generally more familiar and confident with these developments.

Demand for such skills is, however, not uniform throughout the industry. Demand is driven by the speed at which technology is being introduced and the levels of sophistication. While it is difficult to summarise neatly all the technological changes taking place in the industry and their impact on the workforce it is possible to identify the three major technological trends. These include the increasing use of:

- computerisation
- automation
- communication technology.

One of the areas which is changing rapidly as a result of technological change is the prepress area (prepress will be combined and condensed). Technology is opening up this field and creating an environment in which niche trade areas area establishing themselves. Trades such as composition within prepress are also becoming redundant as much of the material is now being prepared in publishing houses and being sent to printers by remote processes (e.g. disk, modem).

Workers in prepress, in particular, will need to possess a 'creative flair' rather than manual dexterity. The need for these 'newer' type skills does not however diminish the need for trade basics which in conjunction with computer skills are thought, by some, to produce the best outcomes. These skills are generic ones that are included among the Mayer key competencies.

Technological change has also brought with it some controversy. There is growing debate regarding the levels of skills needed to operate new equipment (particularly computers). It has been stated that while there is no denying that different skills are being acquired, as opposed to traditional craft skills, the skills are being developed in other industry callings. In addition, work previously performed by skilled tradespeople is now being performed by less skilled people, that is, people who are being supported by software rather than developing the appropriate skills themselves. This is a source of distress in the industry and one which has the potential to create problems.

Technological change will also demand a more multi-skilled workforce. Multi-skilling will need to be embraced by workers who want to survive and flourish in the industry. A broad skill base allows flexibility. On the other hand, workers with a specialised skills base are in danger of losing out.

Challenge: The creation of a more flexible structure to the workforce.

Given the broader range of scenarios presented and the rapid changes in technology, traditional approaches to training (including apprenticeships) must be under some challenge. While it would not be appropriate to disregard traditional approaches to training while the industry is still evolving and undergoing change, it may not however be the most appropriate training for the future. There is no doubt that more flexible arrangements will become increasingly important, predominantly because growth in the industry is occurring outside the traditional areas. Apprenticeships within these areas are, therefore, likely to become less relevant.

Challenge: Training will need to become more open, flexible and accessible to a much wider range of clients than traditionally has been available.

As a result, training in the future will have to be characterised by more:

- flexible type arrangements (including flexible exits)
- enterprise-based programs
- new programs of technician-style orientation (which incorporate electronics as well as computers)
- desktop publishing courses
- more advanced training (which could be provided by the suppliers of advanced technical equipment).

There has been a growing emphasis to involve industry more in providing training, however, while employers may have the latest equipment they often don't have the appropriate skills (or time) to provide their employees with training. On the other hand, TAFE possess the teaching skills but does not have the capital to continually keep up with the latest changes in technology. It is therefore important to build a closer partnership between the two. While TAFE is already working more closely with industry, there is still tremendous opportunity for them to help industry manage training.

Industry in the past has tended to rely heavily on TAFE as their sole supplier of training. With the growing reliance on technology, equipment suppliers could take on a larger role with respect to high technology training. However, this would have to be done in a regulated environment and at a reasonable cost. TAFE's role within this system could be that of 'watchdog' to maintain the system and make sure that training is delivered to an agreed and appropriate standard by qualified trainers.

Such a system could help overcome the current fear that technology will make training more expensive for fewer people. It is felt that because capital investment is expensive so too will be the training which relates to the high technology equipment.

Once again there was much debate regarding whether the introduction of new technology will impact on the numbers of workers needed in the industry. While there are redundancies in some areas, technology (particularly computer technology) have increased the population of employed in others. Nevertheless, while new technology will create work in some areas, on the whole it is more likely to diminish the workforce. As stated during one consultation:

> *the main driving force to change to new technology is to reduce the numbers running the technology*

European experience has shown that organisations have invested in machinery specifically to decrease their workforce. As stated in the *Australian Printing Industry Yearbook 1993* (Printing and Kindred Industries Union, 1993).

> *In several advanced countries, there has been a decrease in the average size of commercial printing companies as measured by the number of employees per firm. This is partly because the diffusion of advanced technology makes it possible for the same number of or fewer workers to produce more output.*

There is no doubt that this is also true in Australia and in fact companies will continue to invest in labour reducing equipment or at the very least there will be a drive to produce more work with the same amount of people.

The introduction of new technology will however demand the need for more support staff. That is there will be two types of workers needed in the future:

A the operators
B the backup force to attend to the machines

If people can reskill there are possibilities for new opportunities. The plethora of desktop publishing bureaus has created a lot of new jobs particularly for those with the appropriate skills. As stated, there seems to be opportunities for those who have identified niche areas and can develop their skills accordingly.

Employment numbers may diminish in the prepress area primarily due to the fact that so many stages of the printing process are being eliminated by new technology. For instance, more and more work is being received in disk form or via modem.

Technology is also reducing the amount of time needed to perform particular tasks, therefore this will also impact on the number of people who will be needed. This is an increasingly common occurrence in the prepress sector.

The newspaper/publishing sector is one area in which manual work is increasingly being taken over by technology. Experience has shown that new presses in publishing (i.e. specifically the larger organisations) have halved the number of people required. While the skilled are not even protected, the unskilled, in particular, have almost been eliminated in this area. Technology will continue to diminish numbers in this area for at least the next two years as large publishing companies install state of the art presses.

While technology has had dramatic effect on employment numbers in many organisations, a number of participants consulted stated that technology is not having that much of an effect on numbers within organisations. The rationale being that much of the rationalisation took place during the recession and many organisations are down to the bare minimum already.

3.3 Industrial relations

The move towards enterprise negotiations has been identified as one of the most significant changes affecting the printing industry in industrial relations terms.

What its effect on training will be, however, is still not yet clear. On a formal level little information has been 'disseminated regarding future industry training structures and agreements.' On an informal level, as identified in a recent VPITB report, it is suggested that:

> 'Any training proposal should be considered within the current negotiations and should not result in fragmented training at enterprise level as well as be consistent with broad industry training planning and agreements.'

Negotiations for restructuring awards have also been proceeding between major industrial parties for a considerable amount of time. As cited in the *Australian Printing Industry Year Book 1993* (Printing and Kindred Industries Union, 1993), award restructuring commenced in the paper, paper products, printing and publishing industry following the national wage case in 1988. It has three features:

1 To modernise awards so they are simpler and more relevant to the needs of the industry.
2 To reduce the number of award classifications and replace these with a smaller number of skill levels (broadbanding), to link these skill levels to wages and to create career paths for employees.
3 To enhance workplace flexibility and improve productivity.

However, at this stage it is unclear when these negotiations may draw to a conclusion.

In turn, despite these uncertainties, award modernisation will:

- bring about a significant need for training and retraining across the industry;
- lead to the need for greater emphasis on enterprise specific training programs;
- highlight such issues as skill enhancement, multi-skilling and the development of more defined career paths for all employees within an industrial enterprise;
- provide for a range of alternative pathways and entry points.

Such changes will also mean that employers will need to familiarise themselves with the current trends in the industrial relations arena. At present, however, it seems that many employers are unclear about what their role is in the process. This will probably have to change if organisations are to become more committed to training.

3.4 Emerging industry training needs and career paths

While there is much debate as to how technological change will impact on career paths, what is certain is that it will have an impact. In the past career progression in the industry was fairly well defined and in some sense quite rigid. The following is an illustration of a fairly traditional and common career path in the industry.

Apprenticeship

▼

Trade certificate

▼

Manual operation

▼

Computers/systems

▼

Sales/marketing

▼

Management

While such a path was valuable it did take some years to attain the more senior positions. Merton in his report (Merton, 1992) also states that promotional opportunities have been limited in the past, however, Merton feels that this will change with the introduction of a new award structure. The new award structure should:

> *provide career path structures and link promotional prospects with training undertaken and qualifications gained, so that previous barriers should instead become incentives.*

In addition, because organisations are employing more and more people with different skills to those valued in the past (e.g. computer/graphic skills) they are becoming highly valued employees and are being provided with opportunities to progress more rapidly than employees in the past.

On the other hand, there are those that feel that while there are career opportunities available within the same organisational strata (i.e. at a horizontal level), for example, within the trade level, scope for movement at a vertical level is not being encouraged. For instance, it seems from discussions that movement or even an interface between those who manage technology and those who manage the organisation is limited. Therefore there is a need to emphasise training which can develop in employees the ability to move across strata. There is also a need for organisations to encourage freer movement throughout all sectors of their organisations.

While technology will play a role in the changing nature of career pathways (be it major or minimal depending on the organisation and the individual) multi-skilling has, in fact, been identified as one of the most important factors which will impact on career paths in the industry. Multi-skilling should allow for greater cross relationships to develop within not only the trade sector but also between sectors.

Consultations indicated that pathways in the publishing sector are also very similar to the pathway illustrated above. Traditionally the production area provided the pool from which chief executive officer (CEO) positions were filled (i.e. compositors, printers etc.). Today, however, because technology is diminishing the numbers in the production area this will have to change. 'There simply won't be the numbers in the production area for this to occur.'

As the traditional pathways diminish it has been suggested that future executives in the industry will have to be selected from areas such as estimation, sales etc., that is, from areas which employ graduates who possess 'thinking skills'.

While there have been numerous suggestions made during the consultations as to how career paths will change it is very difficult to predict how career paths will be affected by technology in the future. While in some instances career paths for some will disappear, for others (a hand full of people) there will be rich opportunities (i.e. for those who are brighter and more qualified).

It has also been suggested that paths, particularly in, prepress could diminish as a result of technological change. Computer generated images (or prepress production on disk) could be one of the major contributing factors narrowing the scope for people in the prepress area as technology is removing the need for people at different stages of the prepress process.

3.5 Access and equity issues

A broad cross-section of the workforce was identified as being disadvantaged, both in equity terms and access to training, during the consultations. Workers identified as disadvantaged within the industry included the following:

- small business employees
- non-skilled workers
- older workers
- rural workers
- table hands (binding sector)
- women
- non-English speaking background people (NESBs)
- the physically disabled
- casual workers
- shift workers.

Shift workers are probably one of the most disadvantaged groups in the industry with respect to access to training. The lack of a standard pattern of shifts makes it very difficult or near impossible for shift workers to attend classes on a regular basis.

Staff employed in small businesses are also often disadvantaged in terms of access to training. Small business owners often constrained by time pressures, staff constraints and tight budgets cannot permit their staff to attend off-the-job training. As pointed out by one industry member, 'small businesses simply cannot afford to have people out of their workplace during the week'.

Small business employees are also often disadvantaged in terms of access to new technology. Trainees who come from companies which are small and specialised, often do not have access to the latest technology. As stated during one consultation, 'small companies will never be able to provide their employees with all the skills', particularly those skills which provide workers with the flexibility to move into different sectors of the industry or even within different organisations in the industry.

Lack of suitable career paths and specialisation in many small organisations also hinder employee incentive to seek training outside of their organisations. As Merton states there is a:

> *lack of incentive for employees in family-owned companies, inadequate career path structures across industry generally and insufficient provision for reward of qualifications in awards* (Merton, 1992)

It also seems from the consultation process that non-skilled workers in the industry are extremely disadvantaged. As stated by one participant, 'there is no real training for the non-skilled.' Therefore this segment of the workforce is increasingly at risk as new technology is introduced and people with higher level skills enter the industry.

Table hands in the binding sector are also identified as disadvantaged. While table hands are seen to play a vital role in the industry and are seen as very competent, their skills are not recognised. It was stated that this could be because the skills needed in this area are manual and the tasks laborious.

A significant proportion of older workers in the industry are also viewed as disadvantaged. Many participants expressed the view that older workers are 'on the back foot' when it comes to technological change. There is a far greater need therefore to develop retraining programs and upgrade the skills of the existing and experienced workforce.

In terms of gender equity, there is a significant degree of consensus that access in the industry is reasonably equitable. There is no doubt that women today have greater access to training than ever before. Indeed, Figure 3.1 graphs the overall number of male and female students in printing and printing related courses in Australia in 1992, and shows that there were more women than men training in that year. However, Figure 3.2 shows that the proportions of male and female students in printing and printing related courses in Australia in 1992 varies considerably when these data are disaggregated by type of course.

FIGURE 3.1 PROPORTION OF MALE AND FEMALE STUDENTS IN PRINTING AND PRINTING RELATED COURSES IN AUSTRALIA IN 1992, ALL COURSES

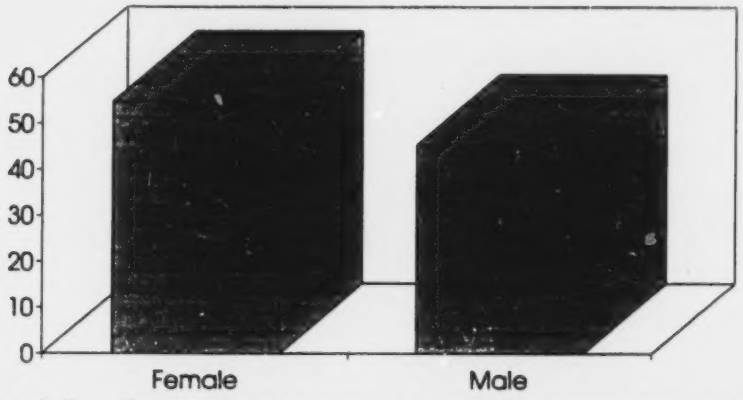
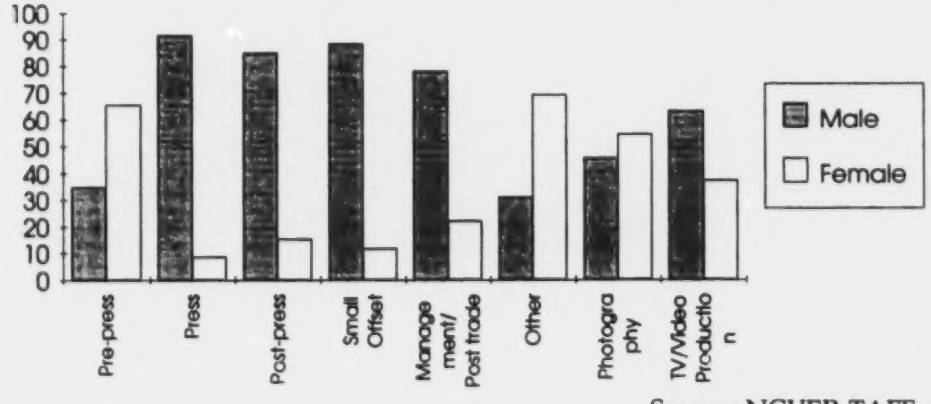


FIGURE 3.2 PROPORTION OF MALE AND FEMALE STUDENTS IN PRINTING AND PRINTING RELATED COURSES IN AUSTRALIA IN 1992, BY TYPE OF COURSE

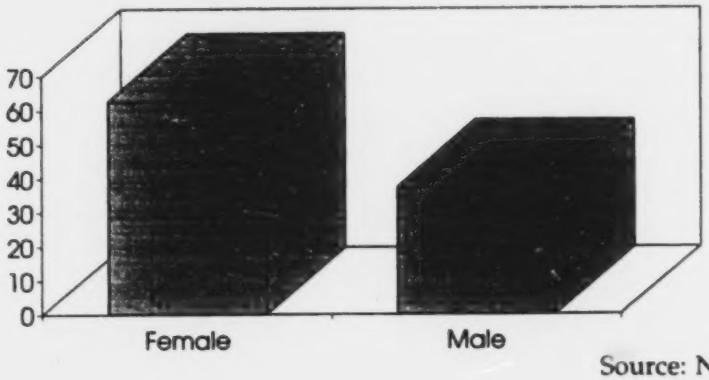


Source: NCVER TAFE statistics

Figure 3.3 graphs the number of male and female students taking shorter (less than 640 hours) printing and printing related courses in Australia in 1992, while Figure 3.4 graphs the number of male and female students taking longer printing and printing related courses in Australia in 1992. Men usually outnumber women in the longer

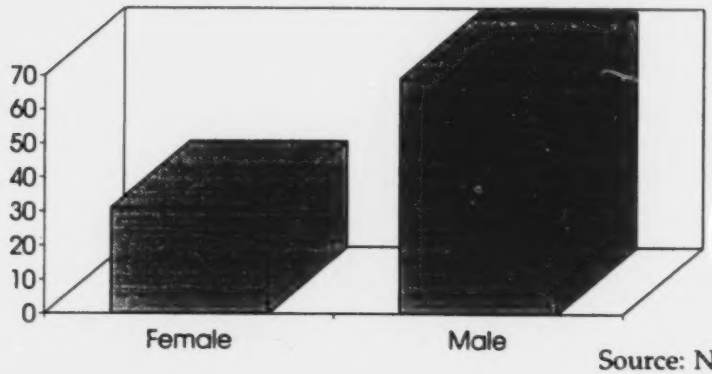
courses, that are usually (but not exclusively) trade courses, while women generally outnumber men in the shorter courses.

FIGURE 3.3 PROPORTION OF MALE AND FEMALE STUDENTS IN PRINTING AND PRINTING RELATED COURSES (LESS THAN 640 HOURS), IN AUSTRALIA, 1992



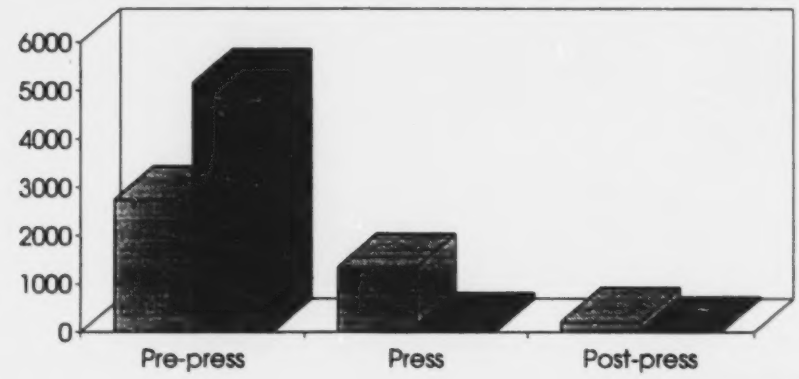
Source: NCVER TAFE statistics

FIGURE 3.4 PROPORTION OF MALE AND FEMALE STUDENTS IN PRINTING AND PRINTING RELATED COURSES (EQUAL TO OR GREATER THAN 640 HOURS), IN AUSTRALIA, 1992



Source: NCVER TAFE statistics

FIGURE 3.5 NUMBER OF MEN AND WOMEN IN PREPRESS, PRESS AND POSTPRESS COURSES IN AUSTRALIA, 1992.



Source: NCVER TAFE statistics

Approximately 52 per cent of prepress apprentices are women but this high participation rate is not reflected in all sectors of the industry. Figure 3.5 graphs the number of men and women in prepress, press and postpress courses in Australia. The lower participation rate by women in the press and postpress sectors may be caused more by a problem of perception rather than being due to access and equity barriers (section 4.6).

Other groups identified as being disadvantaged during the interview process included those from lower socio-economic backgrounds (i.e. not being able to afford the cost of training) and the physically disabled. The physically disabled were mentioned not so much as being disadvantaged in terms of access to training but facing occupational health and safety problems. This is a particular problem in the postpress area as machinery in this area operate at extremely high speeds, which makes it dangerous for certain disabled to operate the machinery.

3.6 Existing workers

There is a need to accelerate the rate of relearning in the industry. People will need to be trained and refreshed regularly, which means they will continually have to be retrained, upgraded and updated. Workers of the future will need to be more flexible and mobile. Therefore while skills up until present have been labour market driven, in the future, the drive will have to come from employees themselves.

There is no doubt that existing workers will need to become more computer literate. While this is already happening in some sectors, workers within the 45–50 age group are proving to be a grey area. That is many of them are finding it difficult to come to terms with computers and new technology. Unfortunately a number of such workers will be made redundant due to their inability or lack of interest in having to adapt to new technology.

Existing workers will also need to develop more team based skills, as there is a growing emphasis in the workplace on working with others. In the past, workers could work more or less in isolation from one another, today however, technology is making this less possible.

As workers will need to be upskilled and retrained more frequently, training programs will need to be of shorter duration. There needs to be an emphasis on modular courses (e.g. trouble shooting courses) which reflect the new needs of the industry.

In turn, training will need to become a lifelong activity. Existing skills will need to be upgraded to cope with the demands of new technology. Existing staff will need to be upskilled in order to reverse the old trend of buying in staff.

Printing industry training plan

Future industry training delivery arrangements

4.1 Towards better printing training arrangements and structures

How can the Australian printing industry build on the best features of current provision to develop a better system?

The future training delivery arrangements for the printing industry need to be determined by the printing industry, with reference to major developments in the national training reform agenda outlined in the Finn, Carmichael and Mayer reports, which are broadly supported by Commonwealth, State and Territory Governments. These reports provide a policy framework within which the future options for training arrangements and structures for the printing industry can be defined.

The revolutionary technological and other changes challenging the printing industry, which have been documented here and elsewhere, led the Western Australian Printing Industry Employment and Training Council to conclude that:

> *Without having an appropriate training culture and without the appropriate training and labour-market strategies in place, particularly for the period 1995–2000, the industry may not be in a position to fully benefit from its significant growth potential.*
>
> (WAPIETC, 1993, p ii)

Recommendation 1

The printing industry recognises that all elements of the industry must respond to the challenge of change in co-operation with education and training providers if the printing industry is to realise the potential benefits for employers and employees of higher productivity and effective international competitiveness based on the use of state of the art technology by highly competent and motivated staff.

4.2 Competency standards

Should national and/or enterprise vocational standards and Mayer key competencies be built in to new printing industry training arrangements?

There are substantial benefits to be derived from a competency-based training system, even though putting such arrangements in place is not a simple matter. Competency-based training has substantially been adopted in principle by the industry as far as vocational competencies are concerned.

Competency-based training places the emphasis on what learners can do (outcomes), not what courses they have done (inputs). Assessment is referenced to objective standards, not referenced to what other students have done. Being referenced to objective standards, competency-based training provides a strong framework for recognition of prior learning, whether formal or informal, and whether undertaken in Australia or elsewhere. These objective standards are of two main kinds, one for vocational and the other for key competencies.

National vocational competency standards are being developed by Competency Standards Bodies, and adopted by the National Training Board. Commonwealth, State and Territory ministers for vocational education have agreed that vocational education will be conducted on a nationally consistent basis to prepare people to meet national competence standards adopted by the NTB. In some cases, the National Training Board is prepared to ratify enterprise vocational competency standards for large enterprises, and occupational standards for occupations which operate in a number of industries (such as clerical staff).

At present, people consulted suggested that training in the industry needs to become more integrated and systemic. That is, there are diverse training programs operating all over Australia. The future training effort, therefore, needs to be more focussed and as similar as possible between States (this should happen with the introduction of CBT in the near future). The training effort in Australia needs some sort of national commonality.

The industry also needs a co-ordinated training program which will ensure that all tradespeople are trained to an approved standard. Currently, it is felt that there are too many different levels of tradespeople in the industry and that a minimum trades level would be much more beneficial for the industry.

Vocational competency standards for a number of occupational categories in the printing industry have been or are being developed by the NPITC with DEET funding assistance. Industry standards for prepress (combining Australian Standard Classification of Occupations [ASCO] 4501/4503 printing composing and graphic reproduction) are expected to be approved by the end of 1993. Competencies for screenprinting (ASCO 4511) were endorsed by the NTB in December 1993. Preparation of competency standards for printing machinists (ASCO 4505) is underway, and is expected to be completed by the end of 1994, along with standards for Binders/Finishers (ASCO 4507) (WAPIETC, 1993, pp 41-43).

In addition to the National Training Board (NTB)-defined vocational competencies, the Finn and Mayer Committees have proposed and partially developed a set of employment-related 'key competencies'. The 'key competencies' are to be developed in all post-compulsory educational pathways, and this requires preparatory work in the educational profiles up to Year 10. The key competencies have been strongly endorsed by the peak industry bodies in Australia.

As section 2.2 on skill shortages and section 3.2 on technological change clearly indicate, there are some current and emerging skill shortages which development of the

key competencies in existing and new staff in the printing industry could help to address. The basic generic skills of the kind that are identified in the key competencies are becoming more and more important as the industry becomes more complex and technological. Table 2.1 on *the value of the key competencies within the printing industry* indicated that the relevance of the key competencies to the industry is recognised within the industry. Indeed, all of the key competencies had solid majorities for essential and useful combined, and in the case of communicating ideas and information, working with others and in teams, solving problems and using technology there were solid majorities for viewing these key competencies as essential.

Recommendation 2

The printing industry endorses competency-based training for industry and enterprise vocational competency standards, and seeks the full implementation of competency-based training in vocational competencies for all printing occupations from 1997.

The printing industry endorses the key competencies and seeks their development and testing by schools or TAFE as a part of all post-compulsory education and training pathways.

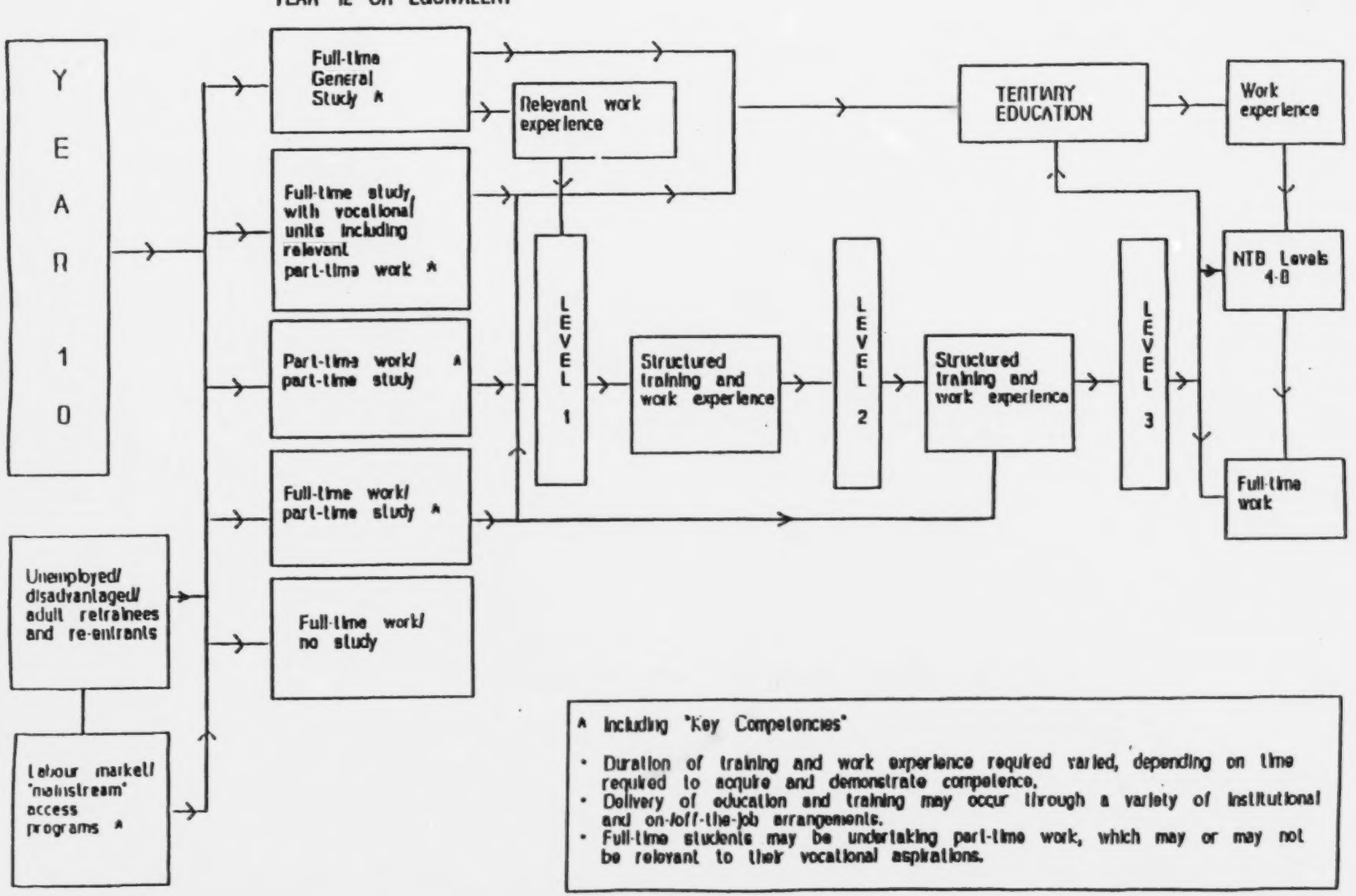
The future selection policies for the industry should include substantial use of development and testing of the key competencies by schools and TAFE as a part of all post-compulsory (post Year 10) educational pathways. The identification of the precise performance levels required for different occupational levels and sectors within the printing industry is a matter for further consideration in the context of implementation of the key competencies, which is the subject of a three-year program of research funding by DEET.

It is likely that the key competencies will be established nationally, although with some variations possible in some States, such as New South Wales. The program will then be implemented by schools, TAFE and other providers within all States and Territories, and the results of relevant assessments will be available to prospective employers. This can complement selection procedures developed by the industry to test aptitudes for industry-specific skills.

Recommendation 3

The printing industry recognises that technological change is driving a requirement for a new skill mix within the industry, and that the key competencies can be combined with aptitude tests for industry-specific skills to develop recruitment standards for the printing industry.

FIGURE 4-1: The Australian Vocational Certificate Training System


YEAR 12 OR EQUIVALENT
YEAR 10
Full-time General Study A
Relevant work experience
Full-time study with vocational units including relevant part-time work A
Part-time work/ part-time study A
Full-time work/ part-time study A
Full-time work/ no study
Unemployed/ disadvantaged/ adult retrainees and re-entrants
Labour market/ "mainstream" access programs A
LEVEL 1
Structured training and work experience
LEVEL 2
Structured training and work experience
LEVEL 3
TERTIARY EDUCATION
Work experience
NTB Levels 4-8
Full-time work
A Including "Key Competencies"
• Duration of training and work experience required varied, depending on time required to acquire and demonstrate competence.
• Delivery of education and training may occur through a variety of institutional and on-/off-the-job arrangements.
• Full-time students may be undertaking part-time work, which may or may not be relevant to their vocational aspirations.

4.3 Flexible entry-level training pathways for the printing industry

The Finn Report (*Young people's participation in post-compulsory education and training*) recommended ambitious targets for higher levels of participation and attainment by young Australians by 2001. Consultations about entry-level training were undertaken in all States and Territories by the Employment and Skills Formation Council, and resulted in the Carmichael report, proposing *The Australian Vocational Certificate training system.*

The ESFC modified the Finn targets for 2001 to 60 per cent of young people attaining an Australian Standards Framework level 3 (the equivalent of a current trade certificate) or higher qualification (including degrees or diplomas), and 90 per cent attaining a nationally recognised ASF level 2 or higher qualification. At present, about half of Australia's young people have no recognised post-school qualification.

To achieve these targets, the ESFC's report proposed the Australian vocational certificate training system. The AVC system is to be an integrated entry-level training system which will deliver competency-based training in both vocational and generic or 'key' competencies through a variety of pathways, on a scale that would meet the modified Finn targets.

The AVC report favours integrated on- and off-the-job training and assessment. The printing industry has decided to support the integrated delivery and assessment of vocational education and training, particularly entry-level training.

The previous relationship between on-the-job and off-the-job curricula was a somewhat tenuous one. The Australian Committee for Training Curriculum (ACTRAC) and other State and Territory bodies are proceeding with development of vocational education curricula in competency-based mode, which can be delivered and assessed on-the-job and off-the-job.

The printing industry is piloting integrated delivery and assessment of on-the-job and off-the-job training in 1993, with a view to all entry-level training being delivered in an integrated manner and in competency-based mode from 1997.

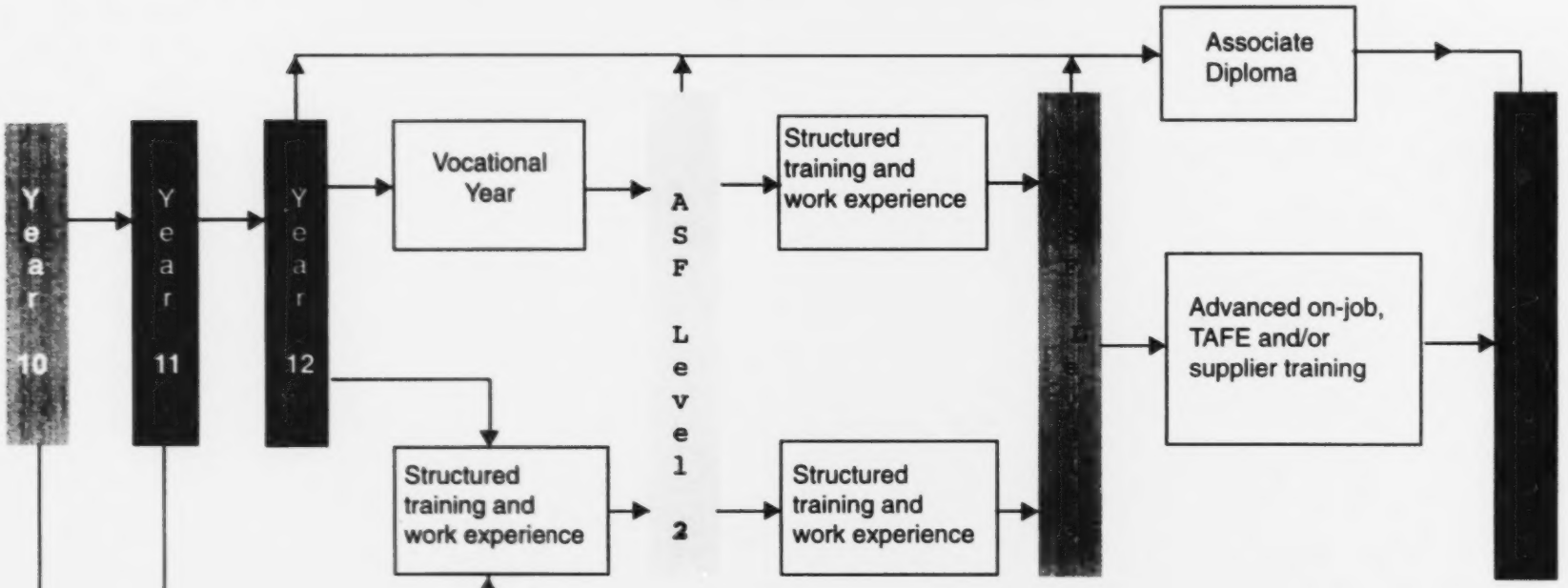
The AVC report suggested several pathways from Year 10 which are depicted in Figure 4.1 of the Carmichael Report (see illustration). The report made supporting recommendations about delivery arrangements, training incomes, equity of access, employer subsidies, and an increased scale of support for vocational education.

The proposed AVC system is presently the subject of extensive pilot-testing in workplaces, schools and TAFE, before it is implemented on a full-scale basis throughout Australia between January 1995 and January 1997. It provides a very flexible set of principles within which a variety of vocational education and training pathways can be delivered.

People consulted emphasised the need for flexibility to be built into training and related career paths. Workers within the industry also need to be provided with a level of skills which will allow them to move more freely in the industry. That is, the industry needs to produce more highly skilled people who are able to be more adaptable and who can come to terms and operate different forms of equipment.

Figure 4.2

Printing industry training pathways


Year 10
Year 11
Year 12
Vocational Year
Associate Diploma
Structured training and work experience
ASF Level 2
Advanced on-job, TAFE and/or supplier training
Structured training and work experience
Structured training and work experience
Early school leavers: half-time study, including key competencies
ASF Level 2
Includes: Operative training, progress in trade courses
ASF Level 3
Includes: Trade level qualifications (in prepress, press and post press). Non-trade courses at comparable level
ASF Levels 4-5
Includes: Advanced trade, supervisor/trainers and technician/specialists

A number of flexible training pathways are relevant to the needs of the printing industry, and consistent with the principles of the AVC system. The AVC proposes three main pathways for students who do not go through post-compulsory schooling and on to university or TAFE:

- a half-time work/half-time study pathway
- a four days work/one day study pathway or
- a vocational year pathway.

Furthermore, the AVC report involves more flexible training pathways in another sense: the outcomes of training. None of the three pathways mentioned, the half-time work/half-time study pathway, the four days work/one day study pathway or the vocational year pathway need be for a full tradesperson (Australian Standards Framework level 3 equivalent) qualification. The training agreements between employer and trainee/employee may be for the trainee to attain a qualification equivalent to Australian Standards Framework level 2, comparable with the outcome of a Australian Traineeship System (ATS) traineeship. In fact, these pathways are intended to cover trade and non-trade training to Australian Standards Framework levels 1-4.

The Australian Traineeship System (ATS) traineeships have not been well regarded in the printing industry, except for the quite successful small offset traineeship. However, the more flexible arrangements being promoted for Career Start Traineeships may prove more attractive to the printing industry, as they have to other industries. Such arrangements are a variant of a four days work/one day study pathway, and the lead to a qualification broadly equivalent to an Australian Standards Framework level 2 certificate.

A further element of flexibility is that training to Australian Standards Framework levels 2 or 3 does not necessarily have to be trade training. It may be a level of training appropriate to highly competent operators (Australian Standards Framework level 2) or non-trade training to a level equivalent to a trades certificate (Australian Standards Framework level 3). TRAC-type programs, vocational year or traineeships might be developed for training to (Australian Standards Framework level 1 or 2) positions.

The training pathways that are most appropriate to the needs of printing industry training are illustrated in the printing industry training pathways diagram.

These elements of flexibility are particularly appropriate in the printing industry, where the trade qualifications remain relevant, but there is a growing demand for non-trade training to a sub-trade (Australian Standards Framework level 2) level, and for more highly qualified technicians and supervisors/trainers (see section 4.4). People consulted said that there needs to be more flexibility in the way training is delivered. It is felt that training should be opened up to more people and it is vital that training becomes more relevant for the industry. It is also important that more employers understand the usefulness of training. Unfortunately, while industry does carry out a lot of training it is not formally recognised. The process of in-house training needs to be formalised.

The half-time work/half-time study pathway is designed for Year 10 or Year 11 leavers. The AVC report proposes that traditional four days work/one day study apprenticeship arrangements should not be available to Year 10 or Year 11 leavers, because they will not obtain enough general education to develop their key competencies to required performance levels. Instead, the AVC report proposes that Year 10 or Year 11 leavers and their employers should enter into training agreements providing for them to work half-time and study half-time. They would be paid for working half-time, and a training allowance would be paid by the Commonwealth through the employer to bring the total wage and allowance income of young trainees or apprentices up to the level of adult AUSTUDY allowances. The training agreement is to cover trainees studying half-time on vocational and key competencies through school or TAFE, the employer undertaking to provide structured work-based training during the three years half-time Year 10 leavers or eighteen months half-time Year 11 leavers will work. These apprentices or trainees would revert to the usual four days work/one days study pattern once satisfactory levels of performance in the key competencies have been attained.

The early school leaver apprentice pathway was the traditional manner of entry into the printing industry but it is becoming less appropriate as the printing industry changes in ways which require higher levels of attainment in skills broadly consistent with the key competencies. TAFE colleges report that early school leaver apprentices engaged as apprentices because they were known by the person to whom they are apprenticed are particularly likely to require additional remedial training to rectify functional literacy and numeracy shortcomings.

The half-time work/half-time study pathway modifies the traditional approach to accommodate this change. However, in competing for talent, the printing industry needs to recognise the appeal of a Year 12 school leavers certificate (variously described in the different States and Territories), and the aspiration of many students and their parents that this milestone be passed. Higher quality recruits are likely to be available from Year 12 completers, now that Year 12 retention is over 75 per cent as a national average and trending up to 90 per cent in some States and Territories, so that the talent pool of the age cohort from which early school leavers can be recruited is quite different from the decades before the 1970s, when Year 12 retention was generally less than 30 per cent of the age cohort.

It is likely that the early school leaver apprenticeship route will 'die out', but some elements of the industry may want to retain this option for a time. Future training is likely to focus on two options for Year 12 completers: either apprenticeships/ traineeships or a vocational year. It is likely that a vocational year leading into a reduced term apprenticeships/traineeships will become the increasingly common pattern for the future, because of its advantages for employers, trainees and industry generally.

A study by the federal Department of Employment, Education and Training (DEET), which developed projections to model *Workforce 2001*, indicated that over 70 per cent of the new jobs created in the 1990s would require at least Year 12 level qualifications, and most of these would require substantial post-Year 12 qualifications.

The retail industry was the only area of substantial growth in semi-skilled work.

The AVC report proposes that traditional four days work/one day study apprenticeships or traineeships only be available for Year 12 completers who have developed an appropriate performance level in the key competencies. This option is becoming the 'modern' form of the traditional recruitment approach. However, flexible training agreement arrangements for ASF levels 2 or 3 or higher attainments may need to be offered. Furthermore, this pathway remains vulnerable to the reduced offering of places that occurs in recessions, with damaging effects on trend-line industry training activities, which creates skill shortages in subsequent periods of greater prosperity.

For Year 12 completers, the ESFC's AVC report proposes that a vocational year option be available which would involve 60 per cent off-the-job training in a school or TAFE or private provider, with 40 per cent on-the-job training through training agreements with an industry skill centre, an employer or a group training company. In the case of the printing industry, the off-the-job training which would probably have to occur in the TAFE providers for the printing industry. The ESFC envisaged the vocational year leading to an Australian Standards Framework level 2 qualification after an average student had a further six months of relevant paid work with appropriate on-the-job training. This is a broad judgement for all industries, subject to adjustment to meet the practical requirements of a particular industry. In the printing industry, practical experience may suggest that it is more or less than six months.

The vocational year is not as vulnerable to cyclical downturns as the two previously mentioned work-based pathways, and section 1.4 highlights the importance of that. Students doing the vocational year would be supported by AUSTUDY while studying, and employers would be asked to engage or provide work experience for students with a substantial amount of 'front-end' TAFE training.

A combination of TRAC and a vocational year could lead to a substantial reduction in training times required to attain Australian Standards Framework levels 2 or 3 qualifications, and still provide high quality entrants to the industry. The curriculum for a vocational year that followed a relevant TRAC program would need to be different from one that followed a mainstream Year 12 program.

Of those who replied to the mailout survey, 76.5 per cent stated that a vocational year 13 would be of value to the industry, while 23.4 per cent felt that it would not.

Support for a vocational year 13 was based mainly on the fact that it would expose young adults to the industry and therefore it would allow them to make a more informed career choice regarding the industry. As stated during one consultation:

> *Anything that gets people involved in the industry and allows them to experience a broad section of the industry would have to be worthwhile. It would create a pool of potential apprentices and stop wastage.*

Other statements made in support of such an option included:

- it would improve a student's chance of obtaining employment
- it would be beneficial for employers in that they get to try the students out in different areas

- the quicker they get trained the better
- future employees would be better trained and able to produce immediately
- employers don't usually get a lot out of their apprentices in the first twelve months.

The proposed 60 per cent off-the-job and 40 per cent on-the-job time component attracted the greatest reservations amongst those surveyed. It was felt employers would probably prefer or expect a higher on-the-job segment. Several participants felt that it would be more beneficial to reverse the proposed time components. That is, students should spend 40 per cent of their time off-the-job and 60 per cent on-the-job. One particular participant suggested that students should spend two months on-the-job and four months off-the-job (per half year).

A further issue raised during the consultations was the fear that those exiting a vocational year 13 would be getting too old to enter the workforce. It was suggested by one participant that there is a lot of difference between hiring a 16 year old compared to hiring a 19 year old. It must be recognised that this rather nostalgic viewpoint fails to recognise the implications of changing need for general education in the printing industry (see section 2.2) which is being reinforced by technological change (see section 3.2).

Other comments made during discussions regarding the vocational year included:

- it depends how it's done—as long as it is not disruptive to production;
- payroll tax and workers compensation should be reduced, with the reduction going towards such a scheme as a vocational year;
- this needs to be done in conjunction with the apprenticeship system so that accreditation is given for year 13;
- the scheme needs to be managed properly, it should not end up being too complicated;
- if the employer is going to pay then they must get something out of it.

The vocational year program should be seen as a vocational, not prevocational, training program, which leads to recognised vocational competencies. In combination with practical on-the-job structured training, the person being trained could attain Australian Standards Framework level 2 qualifications.

One participant pointed out that the curriculum would need to be developed closely in line with the different areas of the industry. For instance, 'the high technology end of prepress would require minimum theory and maximum practical involvement, whereas, printing machining would require a whole lot of theoretical concepts'.

In South Australia, the Croydon Institute of TAFE runs a prevocational course which has been very well received. The course is for one year on a full-time basis. Students enrolled in the course are exposed to each of the five areas of printing, both on- and off-the-job. The on-the-job component is comprised of four workplace experience placements of two weeks. This course has proved to have numerous benefits in that those who exit are far more versatile and adaptable tradespeople. Students gain a significant breadth of knowledge during the course and they can make informed decisions at the end of the course regarding whether they want a career in the industry.

It was suggested that the course could be enhanced by increasing the on-the-job component. The vocational year proposed here would go well beyond such courses to provide vocational preparation in a structured program including practical on-the-job training under a training agreement.

A possible preparatory pathway that is compatible with the AVC report is to build vocational or prevocational subjects into the school curriculum. For instance, the NSW TRAC program in the retail industry enables a Year 12 student to obtain a Higher School Certificate with a fully accredited retail industry vocational subject. This subject involves working unpaid one day per week in the industry obtaining structured work experience and training. In practice, very little additional practical experience is required by students completing a TRAC program for them to attain an ASF level 2 qualification in the retail industry.

Feedback from the consultations indicated that a TRAC-type program has the potential to be of value for the printing industry. Pretraining is seen to be worthwhile for the industry particularly at the school level.

Of those who replied to the mail out survey, 85 per cent indicated that a TRAC-type program could be adapted for the printing industry.

Once again support for a TRAC-type program, particularly from the consultations, was based on the fact that such a program could expose school students to the industry and thus assist them in making more informed decisions about a career in the industry. As stated during a number of consultations, 'it would let young people actually see what the industry's all about', 'people coming into the printing industry have little idea of what the industry is all about. It is a big mystery to school kids'.

Participants stated that the industry generally has a very poor image and that it is not clearly understood by those outside it. As a result, many organisations find it difficult to attract the right sort of students for work experience and ultimately for permanent employment.

A TRAC-type program is also seen by many as a way of providing employers with a pool of potential apprentices. Many employers indicated that those applying for apprenticeships have little idea of what the job they are applying for entails, 'many simply don't know what they are applying for'. It was also felt that such a program could improve the standard of potential applicants by improving their key competencies and also helping develop a more positive attitude towards work.

While a number of those consulted saw benefits in such a program, several also qualified their support with the following queries:

- Who owns the kids in terms of insurance?
- The program must have a clear objective of what it is trying to achieve and the program must be ongoing.
- Will one day a week provide sufficient momentum for a student to build up an adequate understanding of the industry and be of use to an employer?

- There will be a need to determine who is going to teach the students the industry-related subjects at school—will it be the teacher's role or will a tradesperson be brought into the school?
- The benefits to an organisation for participating in such a scheme need to be outlined and emphasised.
- Students need to be well trained at school so that they don't treat their one day at work like a day off.
- The student needs to be as actively involved as possible on-the-job.
- The on-the-job component needs to be well planned so that employers slowly build up the student's level of responsibility.
- It depends on how much time and effort is expected of the employers.

One particular issue which needs to be addressed if such a program is to go ahead is the need to align TRAC-type training with TAFE training. As stated during one consultation, there needs to be articulation between industry-related subjects taught at school and what is taught by training providers. It was felt that if this articulation is made possible then such a program could get a substantial degree of support.

Other participants felt that while a TRAC-type program could be applied to some areas of the industry, it might not work in others. This would depend to a large degree on an organisation's ability to accommodate the students and the program generally.

Others felt that there would be a need to screen participants prior to them entering the program so that their seriousness could be gauged.

Those who tended not to favour this option did so on the following basis:

- students could only be given a limited number of jobs to carry out during their time within industry
- industry may not be able to cope with the management of such a scheme
- the structure of the scheme may be too difficult to manage
- one day a week is not long enough for students to be useful staff members.

It is the last of these points which created the most hesitancy amongst industry members regarding the value of a TRAC-type program. That is, many felt that one day a week is not long enough for students to gain value out of the program and for employers to gain any value from the students. In fact, it was stated by one participant that one day a week may not be worth the investment in time by the employer. Other employers felt that a day a week would be difficult to schedule and maintain. Alternative time arrangements provided by participants during the interviews and via the mailout survey included:

- a two week full time stint would be more worthwhile
- a minimum of three days should be spent in each section, that is, one day each in prepress, the pressroom and bindery.

A TRAC-type program may be unsuitable for the high capital intensity segments of the printing industry, but it may be a very appropriate option for preparation for smaller printing firms with less expensive equipment who might be attracted to such a scheme, particularly with tax concessions applying to the costs of training.

While any scheme has both its perceived strengths and weaknesses, it is clear that a substantial part of the printing industry believes there is a need for a industry specific component at the school level. At present, the printing industry is not well understood by students (their parents or the community as a whole). Many students base their decision to enter the industry on limited knowledge of the industry and it is not uncommon for students to enter the industry just to get an apprenticeship (no matter what that apprenticeship might be), rather than enter the industry as part of a well thought out career move.

As there is a significant need for such options as those outlined, any scheme, be it a TRAC-type program or vocational year, will need:

- the full commitment of industry, that is, if it is really serious about improving the standard of applicants and attracting the right type of person (who is motivated and serious about a career in the industry);
- students will need to be educated so that they treat the experience seriously and understand the value of such a scheme for their future employment prospects.

A less vocationally rigorous approach involves broad work experience within an occupational studies subject that might be prevocational preparation for a related cluster of industries, such as the printing, information, and communication industries. This would not result in occupationally-specific vocational competencies but would be purely prevocational and preparatory.

TRAC-type programs have flourished within NSW where they are recognised within the Higher School Certificate, but in other States (such as SA and Victoria) the comparable Certificate of Education arrangements restrict the scope for TRAC programs but will permit the prevocational occupational studies subject approach. The decision by Commonwealth, State and Territory Ministers in Hobart in December 1993 to move towards a common Year 12 standard may lead to a more inclusive approach which opens the way for a TRAC-style program in all jurisdictions.

The printing industry of the future needs high quality recruits who are capable of being very adaptable. They need a good general education as a basis for vocational training. For at least some areas of the industry vocational preparation could start in TRAC-style programs in upper secondary schools. Trade and non-trade training beyond school level can proceed on the basis of a vocational year in TAFE, including a proportion of structured on-the-job training as part of an integrated program, and followed by further work-based training on the old apprentice/trainee formula (four days work and one day study, or the block release equivalent) under a training agreement until the necessary competencies are demonstrated and necessary experience is obtained. It is essential that recognition of trade and non-trade competencies attained at Australian Standards Framework level 2 be improved, through arrangements like Career Start Traineeships. Better arrangements also need to be developed for articulation and credit transfer from lower to higher Australian Standards Framework levels.

Recommendation 4

The delivery of entry-level training for trade and non-trade staff up to Australian Standards Framework level 3 should be through a variety of training pathways.

In appropriate segments of the industry the printing industry would consider a vocational training course in upper secondary school, involving the equivalent of one day of unpaid structured work based training per week where this is compatible with Year 12 certificate arrangements.

The printing industry also favours a vocational year in TAFE for Year 12 completers, with 60 per cent off-the-job and 40 per cent on-the-job training, followed by primarily on-the-job training (four days work and one day study, or the block release equivalent) for a reduced term specified in training agreements as the main pathways into the industry for trade and non-trade entrants at Australian Standards Framework levels 1-3.

A half-time work, half-time study pathway may be required for Year 10 or 11 leavers to enable them to develop key competencies as well as vocational competencies.

Training pathways need to provide more recognition of trade and non-trade competencies attained at Australian Standards Framework level 2 through arrangements like Career Start Traineeships, and for articulation and credit transfer from lower to higher Australian Standards Framework levels.

The people consulted and surveyed frequently indicated that they were concerned about the rigidities of the present apprenticeship system (see section 2.3). The AVC report was based on a similar finding in industry generally, suggested training agreements for trade and non-trade training, covering variety of pathways. Training agreements should cover entry-level training for all recruits to the industry, and provide for more structure and recognition of training for Australian Standards Framework level 2. These training agreements are to specify the obligations of employers and employees, including training wages agreed between employers and employees where applicable. Any provisions of enterprise agreements related to training would be based on model industry agreements, adapted as required to meet the needs of individual enterprises. This is a flexible approach that provides a framework within which the industrial parties and enterprises in the printing industries can make appropriate detailed arrangements.

Recommendation 5

The printing industry recognises the restrictions which existing apprenticeship arrangements impose on training for the industry and supports the provision of more flexible training arrangements and agreements for trade and non-trade training, involving arrangements for the options outlined at recommendation 4. The training agreements will specify the obligations of employers and employees, including training wages agreed between employers and employees where applicable.

The major provider of off-the-job training for the printing industry is likely to continue to be the TAFE colleges in each capital city of every State and the ACT which presently provide it. There is no strong alternative to this pattern, although enterprise specific and industry skill centre training are likely to increase as 'niche' segments of training for the printing industry which impose negligible competitive pressures on these TAFE colleges. The nature of training for the printing industry at present therefore offers few opportunities to exploit the open training market endorsed by Commonwealth, State and Territory ministers responsible for vocational education and training in November 1990.

Alternative delivery arrangements can be used effectively in the printing industry for a limited range of theory training, but access to operational facilities is necessary for practical training. This requires a continual upgrading by the TAFE colleges in each capital city of every State and the ACT to support exposure of apprentices and trainees to practical training. The cost of such equipment makes continuing in kind contributions from the industry essential. Further consideration will also need to be given to the possibilities of 'co-operative education', in which equipment vendors or other firms make time on operating equipment under appropriate competent supervision available to apprentices and trainees for training purposes.

Recommendation 6

The delivery of quality entry-level training requires closer co-operation of existing TAFE providers with the printing industry, continuing support from the printing industry for the TAFE colleges concerned, and a strategic co-operative development by TAFE and the printing industry of more effective arrangements for integrated assessment of on- and off-the-job training.

Upgrading the skills of existing workers is not intended to be a focal theme of this industry training plan, but no industry training plan could be complete without recognising the need to make provision for training existing workers. The focus of the implementation of the AVC system generally is likely to be driven by the Finn targets for entry-level training of young people in the principal post-compulsory education and training cohort, those aged 15–19 at the relevant time. It is therefore highly desirable for targets to be set by the printing industry for retraining of the existing workforce, in relation to skills of the existing workforce and the patterns of change which are changing the skill mix required in the future in ways that are significantly different from the past in some industry sectors.

Recommendation 7

The printing industry recognises the need for retraining of the existing workforce to equip those whose skills do not meet the changing requirements of the industry.

People consulted suggested that more opportunities need to be created so that training providers and industry can work together. The idea of 'team-training' needs to be emphasised. Retraining of the existing workforce is an area in which 'team-training' is generally the most effective approach.

4.4 Middle-level training for the printing industry

D'Souza and others (Hawthorn Institute, 1988) have researched the need for middle level technician and para-professional (Australian Standards Framework levels 4-6) and higher level (managerial) training for the printing industry. Earlier work was done by NCVER when it was called the TAFE National Research and Development Centre (Hayton, 1987). As a number of later reports have suggested, what remains is for the printing industry and education and training providers to respond to the recommendations of research which has been promoted by the NPITC over a number of years (see Workplace Resource Centre, 1991; and Merton, 1992).

What arrangements are needed for professional development of trainers?

In the short term, short trainer training courses represent an improvement upon untrained industry trainers, but the future effectiveness of training for the printing industry will depend upon a strategic approach to the development of a system more capable of delivering higher quality training, and of assessing on-the-job attainments of apprentices or trainees in a more consistent and valid manner.

The medium-term objective is to develop supervisor/trainers with advanced trade or higher level vocational competencies who are qualified trainers and assessors in competency-based training for the printing industry. The requirements of on-the-job assessment are likely to progressively increase in scope and complexity in the future as competency-based training principles and the need for quality assurance and consistency in practice grow in importance within the industry.

Given the cost of delivery of such advanced level and trainer training through State TAFE arrangements, a national centre has been proposed (Hayton, 1987). However, slow progress on the implementation of a national centre suggests that flexible delivery arrangements should be employed, requiring limited training in residence at one or more nationally co-ordinated delivery centres.

This is an area where the definition of rational occupational structures in the industry has become an area of industrial disputation. The industrial issues are for the industrial parties to resolve, but the skill needs of the industry clearly require better definition of career paths above as well as below the trades.

Recommendation 8

The printing industry urges the early establishment of nationally consistent delivery arrangements for advanced level training for the printing industry, to meet the growing requirement for higher level competencies (Australian Standards Framework levels 4 or 5) in the printing industry workforce. The development of middle-level training should include arrangements for training experienced tradespersons and others with training responsibilities so that they are competent to deliver quality training and to assess trainees in their field validly and consistently. This training should be delivered through nationally co-ordinated arrangements, combining flexible delivery with limited training in residence.

4.5 Management training for the printing industry

A number of reports have for some time highlighted the neglect of management training in the printing industry and the increasing importance of addressing this shortcoming in order to achieve more efficient utilisation of staff and equipment and to enhance the competitiveness of the industry in various other ways.

There has been a considerable development in management education provision by Australian tertiary education institutions. For existing managers and employees who aspire to be prospective managers, the most accessible arrangements are self-funded distance education arrangements like those provided by Deakin University and others, or the Open Learning arrangements that are presently being managed by Monash University, and self-funded or employer-funded short courses by tertiary institutions and private providers like the Australian Institute of Management.

A flexible cost-effective approach to improving management education in the printing industry could build on such existing management education provisions by tertiary institutions and private providers through the development of management training modules which can be delivered by those providers to managers in the industry, and also made available by agreement with tertiary institutions as optional electives within general management associate diploma, diploma and degree programs.

> **Recommendation 9**
>
> **The printing industry proposes the development of specialised modules of management training for the printing industry, which can be delivered as short courses for existing managers and included among the electives available in general management programs, by agreement with appropriate tertiary institutions.**

4.6 Equitable training delivery arrangements

As identified in section 3.5, shift workers are probably one of the most disadvantaged groups in the industry with respect to access to training. There is a need therefore for flexible training arrangements which are compatible with the work schedules of shift workers. More flexible training arrangements could include:

- on-site training at times that accommodate shift work times
- training centred around the needs of students
- training at the work site rather than trainer-centred training

If alternatives such as these are not put into place, shift workers will fail to develop the broader, more flexible skills required of workers in the industry. They will therefore become increasingly disadvantaged as they fall rapidly behind the rest of the industry's workforce.

A significant proportion of rural employees also have limited access to both training and employment opportunities. The predominance of businesses and training facilities in metropolitan locations being the predominant cause. As stated by Merton:

rural employees have restricted access to training because most printing-related training is delivered in a single metropolitan TAFE college in each State (Merton, 1992)

The need for 'alternate training delivery strategies' has therefore been identified to enhance rural access to training.

Furthermore, many printing shops in country locations have antiquated processes therefore employees have limited exposure to new machinery and in turn do not get to fully develop a broad range of skills.

The VPITB recently commissioned a study into investigating the feasibility of using a bus to transport new technical equipment to outer-urban and rural locations and to offer short courses of training (*Printing industry training plan, 1992*). If this type of delivery proves viable some of the disadvantages currently faced by rural employees may be minimised.

Many small business employees also have limited exposure to new, high technology machinery. Group training courses could provide small business employees with the opportunity to be exposed to the latest developments in technology. Nevertheless, it should also be noted that group training can also pose difficulties that would need to be addressed if such a system were implemented.

In terms of access to training, the provision of more evening and weekend short courses could be useful to small business employees. This success of this option is dependant on how motivated employees are to access training during their free time.

An often neglected sector of any workforce in terms of access to training are casual workers. In many cases, casual workers do not get the benefits given to full-time workers (for obvious reasons). There are very few short courses to which casual employees can be sent, to pick up specific skills quickly. An open and more flexible delivery strategy (i.e. modularised programs) could open up opportunities for such people to access training. On the other hand, employers are sometimes hesitant to invest money in training workers who are employed on a casual basis. Employers are therefore encouraged to include both part-time and casual employees in their training programs.

Once again training strategies such as open and flexible delivery arrangements, the continual promotion of life-long learning and the recognition of prior skills could provide older workers with an incentive to upgrade their existing skills. It will be essential to provide the 'older' segment of the workforce with refresher courses if they are to keep up with the latest changes in technology and if they are going to compete successfully with the younger entrants in the market.

In terms of gender equity, there is a significant degree of consensus that access in the industry is reasonably equitable. However, the major problem faced by the industry is that many women have a 'perception' problem with respect to the industry. That is many may not care to have a career in an industry which they perceive to be 'dirty and noisy'. In many ways this is a problem which needs to be addressed by the school

system. Accurate perceptions of the industry need to be formed while potential applicants are still at school (this applies to boys as well as girls).

As stated during one consultation, 'there is a perception relating to the industry that boys go into manufacturing and women go into advertising, journalism etc'. This misconception could be overcome by actively promoting the opportunities the industry may offer to those in Years 11 and 12. There needs to be more education in terms that the industry is rapidly changing and that it is no longer dominated by the 'dirty jobs' and that there are career opportunities available to those who want to make a career in the industry. The growing importance and implementation of technology (i.e. computers) should also be used to promote the 'cleaner' side of the industry.

Challenge: Actively promote the career opportunities available in the printing industry to students in Years 11 and 12 (and to their parents). Old perceptions need to be dispelled, particularly if the industry wants to attract more women and people with higher level skills.

The provision of more work experience or organised tours to different organisations within the industry could help overcome this problem. This relies heavily on the commitment of both industry and schools to work together and provide students with such opportunities.

There is however no denying that areas such as printing machining/finishing still involve heavy work and many women do find such work unappealing and a struggle. One specific area of concern regarding participation by women is in the management area. It was pointed out during one consultation that women are still very poorly represented in management positions. Employers are therefore encouraged to provide women with the appropriate training to develop and enhance their skills which could ultimately assist them in achieving higher level or management positions. This will avoid the wastage of a substantial pool of talent which can be mobilised for the benefit of the printing industry.

Several participants interviewed stated that they did not feel that there were any disadvantaged members in the industry. This poses a particular question of whether industry members have been sufficiently educated to recognise that a person may be disadvantaged beyond that of being physically disabled. Part of the industry's training program therefore could include a series of workshops or even the dissemination of brochures to heighten the awareness of the difficulties faced by the disadvantaged and how these might affect people in the workplace.

Alternative methods of training delivery identified during the consultations which if implemented could assist in breaking down a number of the barriers identified include:

- the development of modularised training programs presented in the form of 'user-friendly' manuals;
- the establishment of a training/skills centre to complement TAFE (i.e. a centre for training education);
- more workplace literacy programs;
- TAFE holding classes on workplace premises;
- technical outreach programs;
- computer-based, multi-media (i.e. videos, audio cassettes);

- a national centre for distance education (to reflect core offerings from TAFE and which would include management training);
- interactive CD.

While the above alternate methods of training delivery were suggested during consultations it must be noted that the provision of such training is often complicated and expensive. Complications which may arise include the material being too theoretical (open-learning), material being too expensive (computer-based learning), some areas being too high technology to allow for alternative delivery (prepress) and so on.

Recommendation 10

Although the printing industry has a reasonably good record on access and equity, consideration needs to be given to measures such as flexible delivery arrangements which can improve participation in training by rural employees, casual and shift workers.

Future assessment, recognition and certification arrangements

5.1 Assessment, recognition and certification

This section of the report focusses on the critical factors of:

- assessment—both on- and off-the-job;
- the recognition of prior learning and recognition within the context of the National Framework for the Recognition of Training (NFROT); and
- the certification of competence—in relation to both the vocational and Mayer competencies.

The purpose of the assessment process is to produce certification of an individual's attainment of competencies in order for the individual to be eligible for further training and to enable them to undertake work of an appropriate level. It must also recognise existing skills and build on these.

Thus any assessment process designed must be:

- focussed on outcomes, that is, the achievement of competencies
- practical and cost-effective
- valid and reliable
- fair and equitable
- supported by competent and approved assessors
- supported by adequate records.

Assessment, recognition and certification will each be considered in turn.

5.2 Assessment

Assessment is a key issue in any industry training plan, but it is one that has tended to be neglected. In any competency-based training system, there need to be clearly defined competency standards, which reflect the marketplace needs of industry now and in the foreseeable future, and so provide a sound basis for assessment. A competency-based training system also needs assessment processes which validly assess achievement in relation to those standards.

There is a general need to assess trainees' attainments against both national and enterprise vocational standards. Therefore there is not one standard, but there needs to be a consensus about what minimum standards are. The appropriate relationship between on-the-job and off-the-job assessment and recognition of prior learning (RPL) are also necessary aspects of assessing attainments in national and enterprise competencies.

However, it is difficult to write standards which reflect both national and enterprise standards, particularly from the diversity of standards applied between companies, if not between individual jobs. This, in turn, provides particular challenges for those devising a viable and nationally-based assessment process covering both on- and off-the-job performance. In addition, it is difficult to produce standards which balance the here and now with the dramatic changes sweeping through the industry.

Resources developed for the on- and off-the-job components of the national curriculum in printing machining attempted to address the issue of assessment. An assessment process was outlined in the on-the-job resources and a range of checklists and questions provided for use by on-the-job assessors or trainees. Assessment tools and specifications have also been prepared for use by off-the-job providers of training. The Queensland Printing Industry Training Council commissioned Intech Australia Pty Ltd to develop options for the implementation of competency-based training (CBT) in printing machining. At present implementation trials are being held in that State. However, a comprehensive plan for the development of assessment systems for use by the industry remains a priority.

The issues paper and the consultations raised and attempted to consider a number of issues in relation to assessment and assessment processes. These included:

- Who should assess trainees' attainments against national and enterprise vocational standards?
- What should be the relationship between on-the-job and off-the-job assessment?
- Who should assess trainees' attainments against Mayer competencies?
- What training should be required of those undertaking on-the-job and off-the-job assessment?
- Who should bear the costs of assessment?
- Who should be responsible for maintaining assessment records?

The consultations established a clear and joint responsibility between off-the-job providers and on-the-job training supervisors for assessing trainees. However for prevocational programs which do not include workplace placements, provider-based assessments only will be possible. Nevertheless assessment activities will need to be structured to maximise the value of the assessment information provided to prospective employers and thereby maximise the value of the assessment process to individual program participants.

Likewise individual enterprises may choose to offer one or more 'modules' from a range of programs and take full responsibility for their assessment. This will involve the use of workplace assessors who will require appropriate training to fulfil this role. Independent industry-based assessors may also be used to ensure the assessment processes used and standards demanded are defensible. The Intech report recommended the use of such assessors for auditing and quality control purposes, in order to:

- provide positive feedback for some enterprises who, early on in the provision of training, are looking for reinforcement of their skills as providers;

- arbitrate, if necessary, to overcome subjectiveness if personality etc, becomes an issue in the training program;
- ensure a consistent approach is maintained throughout the training period;
- provide reassurance that standards are being maintained and thereby consolidate the credibility of the award;
- monitor the ability of the provider to meet the training agreement or contract and provide a positive 'early warning system' of problems experienced by the provider in order to minimise inconvenience to the learner and modify the provision where necessary;
- ensure that all documentation is being maintained, i.e. latest issues of materials, recording of competencies is consistent.

A variety of scenarios are therefore possible for the assessment of attainment against national and/or enterprise standards, including the use of:

- on- and/or off-the-job providers
- supervisors
- designated enterprise staff with a training and/or assessment function, and
- independent industry based assessors drawn from individual enterprises and/or training providers

Those consulted generally expressed concern about the co-ordination of assessment arrangements between off- and on-the-job training. In addition workplaces in the industry have generally not been strong in developing their own more formal practices or supporting existing assessment practices. Logbooks and personal contact are all seen as vital, together with flexible delivery and assessment arrangements to enable workplace and off-the-job training to be as integrated as possible. However, these are not well used or integrated at present. In addition the assessment process has to be product focussed/driven (although it has to take account of people too) and look to a matrix or portfolio of products and process assessments in order to make a final decision about level of performance and the extent to which outcomes have been achieved.

There are also issues related to people not achieving the intended outcomes of the on- or off-the-job training component whilst performing satisfactorily in other components. The final decision would appear to involve the collective exercise of professional judgement by those involved in the provision of on- and off-the-job training and an appropriate weighing of relative strengths and deficiencies. This process will not occur overnight, but needs to be worked towards by all parties involved in a concerted way and in relation to a broad vision of the way in which the industry's assessment process will be designed, implemented and managed.

Training and assessing trainees' attainments against 'Mayer' employment-related key competencies is a more straight-forward matter. Key competencies are seen by industry generally as being relevant underpinning competencies for employment. For the printing industry they include the main general skills seen as being increasing requirements for the workforce in the future. Nevertheless, at least implicitly, the AVC system sees the employment-related key competencies as a public sector responsibility as far as delivery and assessment are concerned, with employers being required to allow early school leavers (Years 10 and 11) unpaid time off to attend relevant training

in key competencies. It would follow that assessment of the key competencies would also be a public responsibility. It is unlikely that employers would want to replicate public assessment of key competencies. However, such assessment processes would have to be carefully designed and implemented to ensure validity. Moreover, a number of key competencies outlined are amongst those which industry seem to regard as important attributes of their present staff—and would be key amongst those explored in the process of staff selection.

Assessor and trainer training are seen as important considerations. It is recognised that there is a need for suitable training for workplace assessors, if not also for those involved in a more industry-wide assessment and auditing role. In addition, it is clear that existing staff in off-the-job providers require both staff development in CBT assessment processes and time to examine the validity of existing processes and develop new ones to compliment those retained as competency-based approaches are progressively introduced.

The final assessment issues are those related to who pays and who maintains records. Both of these are vexed questions.

Initial and some post-initial training and its assessment is seen very much as the province of the public providers, except when individuals fail to conform with assessment guidelines and require significant retesting (for example). In this case, the cost of assessment should be met by the individual and/or their employer.

The maintenance of assessment records will be a shared responsibility of the off-the-job provider and employers. Individuals would retain statements of attainment from off-the-job providers and their logbooks as part of a personal portfolio. A number of those consulted remarked on the complexity of having any form of centrally administered database. Existing selection and other assessment procedures would be adequate to test the veracity of individual's claims. In addition, RPL procedures could be used where there was doubt about the accuracy of the claims made.

5.3 Recognition and certification

Commonwealth, State and Territory Ministers agreed in November 1990 to adopt a national approach to the recognition of competencies, however they were acquired, and in March 1992 they adopted a *National framework for the recognition of training (NFROT).* The framework includes provisions for recognition of prior learning, articulation and credit transfer, accreditation of courses, registration of private providers and mutual recognition of credentialling of qualifications. It is a structure within which it is hoped that closer co-operation will develop. This was a major achievement in Australian intergovernmental relations. Work is continuing on a nationally consistent set of qualifications to be awarded within NFROT, based on the Australian Standards Framework (ASF).

The printing industry's training plan will need to relate to the National Framework for Recognition of Training or the training provided under the plan will lack the advantages of nationally consistent recognition arrangements.

It will also have to be seen in relation to the proposed national qualifications framework. Prior learning and its recognition needs to be formalised within the context of an industry wide approach to assessment arrangements.

Little comment was made by those consulted on the NFROT arrangements. Moreover, with industry restructuring still proceeding, the relationship between levels of training and the Australian Standards Framework remain to be resolved. Finally the implementation of NFROT arrangements is proceeding slowly, with individual States and Territories interpreting the guidelines somewhat differently.

The national qualifications framework outlined in a recent paper circulated for consultation proposed the following principles. A national qualifications framework should:

- provide nationally consistent recognition of outcomes achieved in post-compulsory education;
- provide guidelines for the structure and relationship of qualifications in post-compulsory education, provided by schools, TAFE colleges, recognised private providers and universities;
- help with developing flexible pathways which assist people to move more easily between the education and training sectors and between those sectors and the labour market by providing the basis for recognition of prior learning, including credit transfer and experience;
- offer flexibility to suit the delivery of purposes of education and training;
- encourage individuals to progress through the levels of education and training by improving access to qualifications and by clearly defining avenues for achievement and generally contribute to life-long learning;
- encourage the provision of more, and higher quality vocational education and training through qualifications which normally meet workplace requirements and vocational needs, thus contributing to national economic performance; and
- promote national and international recognition of qualifications offered in Australia.

The proposed system of nomenclature for qualifications certified under NFROT for the vocational education and training sector are:

- Advanced Diploma
- Diploma
- Certificate IV
- Certificate III
- Certificate II, and
- Certificate I

These would articulate with senior secondary certificates of education and degree level programs. In particular, students achieving vocational outcomes as part of a senior secondary award might, in addition, receive, or obtain credit towards, a Vocational Certificate level I or II, as appropriate. Articulation, credit transfer and progression through Certificate levels I to IV would be normal within the vocational education and

training system. A graduate from a Diploma or Advanced Diploma may receive credit towards a Bachelor Degree. In addition, the attainment of a particular certified qualification may provide the entry point for other qualifications. Finally it is proposed that students need not have undertaken the preceding certificate/diploma in order to undertake the next level of training.

This certification system offers great potential flexibility for the industry. It adds weight to a proposal for a range of modules offered at a variety of depths and levels. Formulae could then be used to establish the level of qualification to which an individual was entitled. Accordingly individuals could enrol in individual programs on a needs basis or enrol in a nominated award at a particular level. Such a process offers a great deal of flexibility in terms of content, flexibility and choice and enables a range of organisations and individual needs to be met.

5.4 A proposal for the development of an industry-based assessment system

In a recent *Review of the Australian and Printing and Allied Industries* (Merton, 1992) it was recognised that, while the industry is committed to competency-based training and assessment procedures, their implementation was going to prove a challenge. The review recognised that extensive training and retraining would be required in competency-based assessment techniques both in TAFE colleges and in the workplace.

The industry has a variety of assessment needs, including:

- selection for entry
- entry-level training
- recognition of prior learning and current competencies
- on-going training—including skills development, retraining and management/supervisory training.

The consultation process and the NCVER's previous work in the industry has suggested the need for:

- the development of a comprehensive assessment strategy for the industry which builds on existing good practice; and
- the progressive development of a range of assessment processes, assessor guidelines, management and quality control systems and instruments for use in both on- and off-the-job training. These developments would be consistent with the strategy developed initially above.

There is a need to develop a suitable range of assessor training programs and address ways of recognising the increasingly important role of training within the industry and, in particular, in the workplace. The training and assessment roles will need to be acknowledged as an important component of industrial relations negotiations and in the development of enterprise agreements. Over time industry will look to building towards the development of an Australian system of integrated on- and off-the-job assessments using trained industry-based trainers and assessors as well as TAFE.

Recommendation 11

The printing industry supports the progressive integration of assessments conducted on- and off-the-job, starting with arrangements that are initially as simple as can be practicable, but gradually evolving over time towards arrangements which provide safeguards for quality assurance based in validity and consistency in assessment practices. The printing industry supports the development of nationally consistent certification arrangements, with a minimum of bureaucracy, and the National Framework for Recognition of Training.

Funding training

6.1 Who pays?

The issue of how entry-level training for the printing industry is to be funded will be significantly affected by the choices made by firms within the printing industry about how training is to be delivered and assessed. The choices made about primarily work-based or primarily institution-based training may be particularly significant in relation to funding.

Printing industry employers have traditionally undertaken a substantial role in training through the provision of apprenticeships, and provision of in-house trade and non-trade training by employers is increasing. The printing industry has also virtually kept TAFE courses for the printing industry functional by providing equipment under joint venture arrangements and in-kind contributions to TAFE courses without which TAFE providers would not have been able to sustain their present level of service.

Retraining of the existing workforce is not to be addressed as a major issue in the industry training plan, because the industry training plan is to focus on entry-level training. It is highly likely that Commonwealth, State and Territory Governments will agree about retraining of the existing workforce in the printing industry being funded by industry wherever industry continues to function. Only in the event of major displacements are governments (primarily the federal government) likely to undertake responsibility for retraining of the existing workforce.

6.2 Training incentives

The ESFC's AVCTS report proposed that training allowances be provided by the Commonwealth for trainees engaged in work-based training where they were necessary to bring the trainee's income up to the common benefit level for 18 year olds (e.g. on AUSTUDY). The training allowances for trainees are likely to provide a sufficient incentive for trainees who take the half-work/half-study pathway option, and AUSTUDY will be available to those who take the vocational year pathway on the same basis as other students enrolled in full-time study programs.

The ESFC's AVCTS report also proposed that employers be paid training incentives under the Australian Vocational Certificate (AVC) system in the form of a lump sum when trainees undertaking work-based training attain ASF level 2 and ASF level 3 competencies. The employer training incentives offered in relation to the Australian Vocational Certificate (AVC) system, while welcome, are not in themselves likely to encourage printing employers to offer enough training places.

The incentives for providing work-placements for trainees under the AVC system have been extended by recent amendments to the Training Guarantee Act which make provision of such work-placements for trainees tax deductable expenditure. Contributions to TAFE providers of training to the printing industry are also likely to be tax deductible expenses. These recent changes to relevant legislation permitting expenditure on training through work placements and other related training of students and trainees to be tax deductible are a necessary complement to the lump sum incentives recommended in the Employment and Skill Formation Council's AVCTS report.

People consulted emphasised that the problem of apprenticeship numbers declining during economic downturns is a major one. This has a destabilising effect on the industry. It is paramount that trends within and outside the industry are identified so that people can be trained appropriately so that there is a sufficient pool of skilled people in the future.

The experience of the printing industry with declines in work-based training during downturns in the economy is consistent with the overall pattern in Australian industry in both the 1982–83 and 1990–92 recessions, and this reinforces the need for the recommendations in the Employment and Skill Formation Council's AVCTS report about additional counter-cyclical support measures for employers providing work-based training to come into effect immediately when leading economic indicators warn of an impending recession.

Implementing change

7.1 Changing Australia's training system

The process of changing Australia's training system is likely to take more than a decade to be fully implemented. The major decisions related to the Australian Vocational Certificate (AVC) system are to be taken by ministers in the final quarter of 1994, and the present intention is that the new AVC system will be introduced between January 1995 and January 1997. However, change of this complexity is not likely to be fully implemented in all industries and vocational education and training providers throughout Australia by 2001.

The relatively concentrated off-the-job vocational education and training arrangements for the printing industry may assist the printing industry to be among those leading the process of change, and gaining the benefits of better training earlier.

The printing industry should seek to take advantage of the extensive evaluations of the AVC pilot programs (relating to all aspects of the AVC system, not just the limited printing industry feasibility studies) to obtain further information to guide the process of implementing change.

7.2 Training reform and the printing industry

The national training reform agenda provides the context within which the development of this industry training plan for the printing industry will unfold. Some of the elements in this plan (relating to middle-level and management training, for instance) have been the subject of extensive NPITC-funded research. This national industry training plan is a vehicle for the mobilisation of the printing industry to attain in-practice changes about which much has been said and written before.

7.3 Towards a more highly skilled Australian printing industry

This plan is intended to set the framework for the development of a more highly skilled Australian printing industry over the next decade. Not all of the details can be specified at this point in time, because they will be subject to negotiations between the industrial parties and to decisions made within enterprises and organisations associated with the printing industry or delivering education and training services to the industry.

This plan notes the factors impinging on the industry, specifies the strategic directions of change, and the implications of pursuing the changes prescribed. The challenge of change is for the Australian printing industry to join with the National Printing Industry Training Council and the relevant public authorities to put this industry plan into practice for the benefit of the Australian printing industry and Australia.

Attachment A

Brief profiles of each industry sector

2631 Pulp, paper and paperboard. Involved in the production of paper from wood pulp or recycled materials. The sector is mainly located in NSW, Victoria, Tasmania and Queensland. NSW and Victoria have substantial numbers of small firms but the bulk of employment is in large companies. There is a tendency for decentralisation in NSW and Tasmania.

2632 Paper bags (including textile bags). Production of bags usually on dedicated machines with or without printing. Print usually done by either lithography or screen and most low resolution. Most companies are medium size (10–49 employees). There are large companies (100+ employees) in Victoria, SA and WA.

2633 Solid fibreboard containers. Production of boxes and cartons of all sorts. Printing done by lithography or screen and ranges in resolution from low to very high. Industry is almost entirely in NSW and Victoria. While there is a range of company sizes the vast majority of employment is in large firms.

2634 Corrugated fibreboard containers. Production of corrugated containers. Printing mainly by lithography usually at low resolution. Generally large companies found in all States.

2635 Other paper products. A range of products including toilet paper and cigarette papers. There is a significant number of small companies. Victoria is the main centre with eight companies of over 50 employees.

2641 Publishing. Involved in the preparation of books and magazines for printing. Increasingly prepress work is being done in-house using desktop technology. There is a very large number of small companies. Half of all large companies (100+ employees) are in NSW.

2642 Printing and publishing. Combining editorial, prepress and press and post press functions. There are significant numbers of small companies. Large companies (mainly newspapers) are found in all States.

2643 Paper stationery. Production of stationery of all kinds from greeting cards to envelopes to rough note pads. Mainly lithography though there are some specialised letterpress functions. There is a range of company sizes with most large firms in NSW and Victoria.

2644 Printing and bookbinding. A very wide range of companies from specialised binders, small offset firms to large web offset plants. Quality of product is similarly varied. There is a very large number of small companies with most employment being in companies with less than 20 employees.

2645 Printing trade services. Includes type houses and graphic reproduction trade houses. There are significant numbers of small companies with the only large ones (100+ employees) in NSW and Victoria.

2767 Ink manufacture. Involved in the manufacture of inks of various types. Mainly medium sized companies in NSW and Victoria.

3471 Flexible packaging and abrasive papers. Mainly large companies using flexography or lithography. Main centre is Victoria though NSW and SA also have some large companies.

3484 Signs and advertising displays. Products range from sign writing to display units to bill-boards. When print is used it is usually lithography or screen. Mainly small companies.

4794 Books and paper products wholesaling. Distribution of books and paper products. Mainly small companies with a few large ones in NSW and Victoria.

6382 Advertising services. Mainly involved in concepts and design and marketing. Increasingly some prepress work is done in house on desktop technology. Mainly small companies.

6384 Typing, copying and mailing services. A slightly tangential sector only part of which is really in the printing industry. Large mail houses which are mostly in NSW use a number of printing and packaging functions. Most companies are however very small and their main impact on the printing industry is through the use of desktop technology to replace some prepress functions and the increasing sophistication of photocopying technology.

Attachment B

Consultations and survey

Consultations

The consultation process involved both personal interviews and telephone interviews of organisations in all States and Territories. In total fifty organisations were consulted.

An initial round of consultations was carried out amongst executive directors of the Printing Industry Training Councils. The consultation process also involved the input from all TAFE colleges.

In carrying out the consultations the authors attempted to gather the opinions of a broad cross section of the industry, therefore, employer organisations, the union, trade associations, private providers, newspaper publishers, government printers were all included in those consulted. The opinions of representatives of small, medium and large organisations were also an integral part of the consultation process.

Survey

A mailout survey was sent to 450 organisations involved in the printing industry. While the survey population was drawn at random a conscious effort was made to include a broad cross section of the printing and allied industry (i.e. small, medium and large organisations covering a wide range of industry sectors). All States and Territories were included in the survey sample. The breakdown of country and metropolitan returns were 11 per cent and 89 per cent respectively.

Of the 450 surveys sent out, 17 were return to sender and 101 were completed and returned (unfortunately 4 were late and therefore not included in the results). Nevertheless, the response rate was a satisfactory 25 per cent.

The following industry sectors were represented in the sample:

- small offset printing
- screen printing
- fibreboard
- newspaper production
- metal decorating
- book/magazine publishing
- continuous stationery
- desktop publishing
- graphic design
- envelope sector
- cartons
- label and tag
- flexible packaging
- graphic reproduction
- other

The authors would like to take the opportunity to thank all those who took part in the consultation process and the mailout survey. Contributions made by all those involved were invaluable and greatly appreciated.

Attachment C

NPITC Carmichael Working Party

Mr John Jarvis	National Printing Industry Training Council
Mr Michael Grey	Industry Training Operations Branch TAFE and Skills Formation Division DEET
Mr Ken Stenner	Printing and Allied Trades Employers' Federation of Australia (PATEFA)
Mr Bob Milligan	NSW Government Printing Service
Mr John Cahill	Printing and Kindred Industries Union
Mr Gary Knespal	Graphic Arts and Services Association of Australia (GASAA)
Mr John Kelly	Area News
Mr Ian Rowlandson	David Syme and Company Ltd
Mr R W Sinclair	Regional Dailies of Australia Ltd
Mr Keith Heness	Graphic Arts Services Association
Dr B Thorn	National Printing Industry Training Council

Attachment D

ASCH and course coding

ASCH: Annual Student Contact Hours

The number of hours of prescribed class attendance within the reference year in all supervised elements (e.g. lectures, laboratory sessions, workshop sessions, tutorials, fieldwork) of a course in the case of courses taken on an internal basis, and the equivalent thereof in the case of courses taken on an external or multimodal basis. If a course is offered only on an external basis then the annual student contact hours is estimated on the basis of similar courses conducted by the authority on an internal basis. (Source: National Centre for Vocational Education Research Ltd., 1993 *Selected TAFE statistics, 1992*, p 2).

Course coding

Courses for statistical analysis were selected from the 1991 and 1992 TAFE Fields of Study 'Film and Photographic Arts', 'Graphic Arts and Design' and 'Printing Engineering/Technologies'. The list of courses classified as 'preprint', 'print' and 'postprint' related courses follow:

Names of courses coded 'pre-print':

Advanced Certificate in Commercial
Art Apprent. Graphic Reproduction
Art and Design
Art and Design Certificate
Associate Diploma Arts Graphic Arts
Associate Diploma of Arts
Bridging Art and Design
Bridging Art and Design—FFS
Brush Up Graphic Art
C-Graphic Arts and Design
Certificate in Art Practice (Stage 1)
Certificate in Art Practice (Stage 2)
Certificate in Commercial Art (Display)
Certificate in Composing
Certificate in Design Arts (Introduction)
Certificate in Desktop Publishing
Certificate in Graphic Design
Certificate in Graphic Reproduction
Certificate in Hand and Machine
Certificate in Screen Printing Stencil
Certificate of Composition
Certificate of Graphic Arts
Certificate of Graphic Reproduction
Certificate TS Printing Composing
Certificate TS Screen Printing
Commercial Arts Skills/Awareness
Commercial Fine Art
Comp. Appl. Graph Arts
Comp. Appl. Graph Des.
Composition
Composition—Trade Course
Composition Trade
Computer Applications—Graphic
Course of Design
Course of Design 2D
Course of Design 3D
Course of Graphic Design & Com (Art)
Course of Tech. in Art & Design
Creative Visualisation

D-Graphic Arts and Design
Design (Bridging)
Design Methods and Principles
Design Principles
Diploma of Arts in Graphic Design
Drawing (Bridging)
Drawing What You See

E-Graphic Arts and Design
Electronic Colour Reproduction
Electronic Colour Scanning
Electronic Publishing

F-Graphic Arts and Design

G-Graphic Arts and Design
Graph Design Fashion Illustration
Graphic Arts
Graphic Arts Appreciation Design
Graphic Design
Graphic Design Associate Diploma
Graphic Design Finished Art Certificate
Graphic Design Illustration
Graphic Design Photography
Graphic Design Seminar
Graphic Design Small Business
Graphic Reproduction App.
Graphic Reproduction Basic
Graphic Reproduction Trade
Graphic Reproduction Trade Course
Graphics
Graphics for Printing

Illustration Techniques
Image Preparation Basic I
Introduction to Computer Types
Introduction to Illustration Techniques
Introduction to Layout and Design
Introduction to Marker Visuals

Koori Art and Design

Layout and Design

Pattern Drafting
Phototypesetting
Pre-press Retraining

Print Design & Desktop Publishing
Print Reading—Layout & Development
Printing & Commercial Art Studies
Printing Composing (Trade)
Printing Design and Typography I
Printing Design and Typography II
Printing Design Topography
Printmaking

Scitex Assembler—Elec. Pagination
Screen Print/Stenc.
Screen Printing & Stencil
Screen Printing & Stencil Preparation
Screen Printing/Stencil Preparation
Stencilling

Typographic Design & Layout

U-Graphic Arts and Design

Visual Merchandising Skills

X-Advanced Certificate in Art
X-STB Advanced Certificate

Names of Courses Coded 'Print'

Apprent. Printing Machining

Basic Screen Print
Black & White Printing—Adv.

Certificate in Printing and PR
Certificate in Printing Machining
Certificate in Printing Machining
Certificate in Voc Ed—Printing Introduction
Certificate of Print Machine
Certificate of Small Offset Print
Certificate TS Printing Machining
Colour Printing—Basic

F-Printing Engineering/Tech.
Flexographic & Gravure Printing
Flexographic Printing

Heidelberg GTO Machine Operation

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Label & Tag Induction Prog—I
Litho Printing Techniques
Lithography/Letterpress Print

Multi-Colour Computer Control Printing

Offset Printing—Update

Print Mach. TR Rot. LP
Print Machining (Int)
Printing
Printing Machining
Printing Machining—Trade
Printing Machining App. Course
Printing Machining—Trade (Relief)

Screen Printing Techniques
Semi-automatic Printing Workshop
Silk Screen Printing—Intro.

Names of Courses Coded as 'post-print'

Binding and Finishing—Trade Co.
Binding and Finishing App.
Binding and Finishing Trade
Book Binding and Finishing
Book Binding and Repair
Bookbinding

Certificate in Binding and Finishing
Certificate in Bookbinding—Trade
Certificate in Binding and Finishing

Fine Bindings Restoration

Bibliography

Articles

Frenkel, S J 1990, 'The incidence and control of technical change in the Australian printing industry', *Economic and industrial democracy*, 2, pp.39–64.

Sheridan, G 1993, *Industry training plans: The 'blueprint' for the future training system for 'X' industry*, DEET.

Books/Reports

ABS Business Register as at August 1992

ABS Catalogue No. 1201.0 (Australian Standard Industrial Classification).

ABS Catalogue No. 2731.0, 1991, Census data.

ABS Catalogue No. 6360.0, Distribution 2nd comparison of employment earning and hours, Australia, 1991.

ABS Catalogue No. 8201.0 Manufacturing Census 1991-92 (preliminary).

ABS Catalogue No. 8221.0 Manufacturing Industry Australia.

Australian Education Council, Report of the Australian Education Council Review Committee (Chair: B Finn), July 1991, *Young people's participation in post-compulsory education and training*, (3 vols) AGPS, Canberra, July 1991 (Finn Report).

Carmichael Report, (see Employment and Skills Formation Council).

Department of Employment Education and Training, Economic and Policy Analysis Division, June 1991, *Australia's workforce in the year 2001*, AGPS, Canberra.

Department of Employment Education and Training, Information Services Branch, 1993, *The printing trades in NSW: A labour market assessment*, Commonwealth of Australia.

D'Souza, C & Eckersall, K 1988, *Needs analysis: Printing industry higher training*, NPITC (Vic), Melbourne.

Deveson Report 1990, *Training costs of award restructuring*.

Employment and Skills Formation Council, March 1992, *The Australian Vocational Certificate Training System*, NBEET, Canberra, (The Carmichael Report)

Ferguson, M D 1992, *A workplace analysis of the printing industry in South Australia*, NPITC (SA), Adelaide.

Finn Report (see Australian Education Council).

Graphic Arts Technical Foundation 1993, *1993 Technology forecast*, Graphic Arts Technical Foundation, Pittsburgh, PA.

Hayton, G 1987, *Training arrangements for the printing industry*, TAFE National Centre for Research and Development for NPITC, Adelaide.

House of Representatives, Standing Committee on Employment Education and Training 1989, *The restless years: An inquiry into Year 12 retention rates*, Commonwealth Parliament of Australia, Canberra.

ILO 1993, *Security of employment and income in the light of structural and technological change in the printing and allied trades, having regards to other media*, Report II, Geneva.

Keating, Hon P J, MP, 'One nation', 26 February 1992, and Minister for Employment, Education and Training and Minister for Higher Education and Employment Services, 'Employment, education and training initiatives in the February economic statement', February 1992

KPMG/Peat Marwick 1993, *Final report into the required training and delivery system for the Australian screen printing industry*, vol.1, KPMG/Peat Marwick.

Mayer Committee report 1992, *Putting general education to work*, Melbourne.

Merton, J 1992, *A review of the Australian printing and allied industries*, VEETAC Working Party on Efficiency and Equity Reviews.

National Training Board 1992, *Policy and guidelines*, second edition.

NCVER 1992, *Apprenticeship statistics 1982-1992*, Commonwealth of Australia.

NCVER, TAFE statistics (unpublished data).

NPITC 1993, *Overview of the printing industry—1993*, Sydney.

NPITC 1991, *Technical change and skill formation in the printing industry*, Sydney.

NSW Department of TAFE 1986, *Submission to the national feasibility study of alternative training approaches in the printing industry*, NSW Department of TAFE, Sydney.

Preddle I & Associates 1993, *Return to industry*, TAFE National Staff Development Committee, Victoria.

Printing and Kindred Industries Union 1993, *Australian Printing Industry Yearbook 1993*, (ed. Cahill) Sydney.

Printing and Kindred Industries Union 1993, *Graphic Arts Award 1977*, 1993 Edition

Shetewi, A 1993, *Tasmanian Printing Industry Training Board report into the re-training needs of prepress tradespeople in Tasmania* (Draft report).

TAFE National Staffing Development Committee (see Preddle, I and Associates).

Tasmanian Arts Industry Training Board 1993, *Communication design training needs analysis* (Draft report).

Thorn, B 1992, *Printing industry training in Australia 1991/92*, NPITC, Sydney.

Thorn, B 1994, *On-the-job training for printing apprentices in NSW*, NPITC, Sydney.

VEETAC Women's standing committee 1993, *Guidelines and principles of gender equity in the development of industry training plans*, VEETAC, Canberra.

VEETAC Working Party on the Implementation of Competency-based Training 1992, *Assessment of performance under competency-based training* and *Administration of competency-based training* (consultation papers).

Victorian Printing Industry Training Board 1992, *Printing industry training plan, 1993-1996*, Victorian Printing Industry Training Board, Melbourne.

Western Australian Printing Industry Employment and Training Council 1993, *Industry training plan of the Printing Industry Employment and Training Council 1994-96*, Western Australian Printing Industry Employment and Training Council, Perth.

Workplace Resource Centre (NSW) 1991, *Technical change and skill formation in the printing industry*, NPITC, Sydney.